TECHNOLOGY DEPT.

Member Associated Business Papers, Inc.

The Newspaper of the Industry

Member Audit Bureau of Circulations.

# AIR CONDITIONING AND REFRIGERATION News

Issued Every Monday at 450 W. Fort St., Detroit 26, Mich.

JAN. 14, 1946

Vol. 47, No. 2, Serial No. 878.

Established 1926.

PUBLIC LIBRARY JAN 21 1946 DETROIT

Reentered as second-class matter October 3, 1936 at the post office at Detroit, Michigan, under the Act of March 3, 1879. Trade Mark Registered U. S. Patent Office. Copyright, 1946, by Business News Publishing Co.

## Inside Dope

By George F. Taubeneck

Now It Can Be Told Dept.
Electron Gun Aids Receiving Super-Tube
Ships 'Betrayed' by Radar Trying Assignment
Gasoline Tanks as Targets Tests in Below Zero Weather

### *Now It Can Be Told Dept.*

Inasmuch as the magic world of microwaves is going to become of increasing interest and importance to electrical appliance dealers, this department has been asking a few questions about wartime developments in electronics which may have especial significance for the trade.

Some of the background information on these developments is now becoming available, and we intend to present it in this column from time to time.

Friends at Westinghouse, for example, have come through with quite a bit of dope on that magic item, Radar (radio detecting and ranging).

It makes fascinating reading.

### *Electron Gun Aids Receiving*

Heart of the radar receiver is the cathode ray tube—an electron "gun" that fires a stream of electrons against a fluorescent screen to make a luminous spot.

The position of this spot on the screen is controlled by a series of four electrically charged plates inside the tube which can make the spot move up and down, or from side to side.

Each time the transmitter sends out a beam, the luminous spot moves across the fluorescent screen in a straight line. If a signal is reflected from a target, the receiver picks it up, amplifies it and impresses it on the vertical deflection plates. This causes the spot to deflect sharply upward, revealing the presence of a target in the form of an inverted "V," called a "pip.'

The time that elapses between the start of the cathode ray beam and the appearance of a "pip" is automatically a measure of the range of the target.

If a "pip" appears one millionth of a second after the beam begins to move across the screen, the distance from transmitter to target and back is 327 yards—since the speed of the outgoing beam is 327 yards every millionth of a second. Half of this distance, or 163½ yards, is the actual range of the target.

An indicator using the cathode ray beam may be employed for conveying to the operator complete information concerning any target. Not only moving targets, but islands, coastlines, buoys, and lighthouses are revealed by the luminous beam on the screen.

### *Super-Tube*

Pooling its talents with an electronic tube manufacturer, the U. S. Army Signal Corps perfected workable long range radar detection sets three years before Pearl Harbor. One of these sets did watchdog duty at the Panama Canal more than a year before America's entrance into Global War.

This tube was of revolutionary design, and produced 10 times more power than any other ultra high frequency electronic tube built previously.

An Army-designed radar set, containing this super-powerful tube, passed rigorous field tests on a wind-swept New Jersey hilltop in 1938; and qualified for subsequent wartime duty as a defender of American coastlines around-the-clock as well as the pre-war guardian of the Canal.

*(Concluded on next page)*

## Wisconsin Code To Get Public Hearings

MADISON, Wis.—M. A. Edgar, chief boiler inspector for the Industrial Commission of the State of Wisconsin, last week told AIR CONDITIONING & REFRIGERATION NEWS that copies of the proposed refrigeration safety code for Wisconsin would be made available to all interested parties, and that public hearings will be held for the purpose of getting suggestions from those who have an interest in such a code.

(In its Dec. 10 and Jan. 7 issues, the NEWS reported that some members of the industry have expressed alarm over some of the proposed provisions of the code, and particularly over the fact that they were unable to get copies of the proposed regulation, or to attend the preliminary hearings.)

Mr. Edgar explained the functioning of the Industrial Commission in formulating such a code as follows:

"The Industrial Commission's procedure in the adoption of a new safety code or the revision of an old one is to form an advisory committee fairly representative of all the interests involved and give the committee a free hand to draft the code without interference of any kind.

"Like most committee meetings these must, of necessity, be limited to the members of the committee. To permit outsiders to come in and express themselves would not only interfere with the committee's deliberations, but undoubtedly would delay matters and perhaps bring about consideration confusion.

When the committee has finished its work, the proposed rules are given to the Industrial Commission. The commission will then have them mimeographed and sent out to all interested parties together with dates and places of public hearings with plenty of time for the public to study the proposed rules and prepare to appear at one of the public hearings and offer suggestions that will assist the Industrial Committee in its efforts to secure sensible and reasonable rules."

## *'Bus of Tomorrow' Will Have 'Individual' Air Cooling and Ice Water*

DETROIT — The intercity motor coach passenger of 1964 will ride at a 100-mile-an-hour clip in a fully air conditioned and pressurized bus, with ice-cold drinking water, a radio, and a radio-telephone within arm's reach—and even his baggage will be stored in an air conditioned compartment.

This is not the prediction of a "dream-car artist" but that of an engineer picturing what he believes will be the bus of tomorrow. The engineer is L. H. Smith, vice president in charge of engineering for General American Aerocoach Co., of Chicago.

Asked to prepare a paper on this subject for presentation during the annual meeting of the Society of Automotive Engineers at the Book-Cadillac hotel here Jan. 7-11, Mr. Smith plotted the progress of the industry over the past 20 years, projected those curves 20 years into the future, let his imagination engage in a few flights of fancy, and came up with this vision of "The Motor Coach of the Future."

In order to attract more business in the future, more comfort must be built into motor coaches, Mr. Smith told the SAE. This, he said, justifies the prediction of a new, improved air conditioning and ventilating system, circulating ice water and filtered fresh air, along with a forecast of wider and longer buses with retiring rooms, inside destination signs, polaroid glass windows, individual draft control, and sound-proofed bodies.

*(Concluded on Page 29, Column 2)*

## Schedule Given on Production of Admiral Models

CHICAGO—Volume production of Admiral Corp.'s "Dual-Temp" refrigerator will depend on the effects of the impending steel strike and other material procurement factors which at this time cannot be predetermined, Ross D. Siragusa, Admiral's president, declared last week.

A limited number of refrigerators has been coming off the production line of the company's refrigerator fabricating plant at Connersville, Ind., since late October, but has not yet reached proportions large enough to meet dealer display needs, Mr. Siragusa said.

The "Dual-Temp" as redesigned by Admiral was placed on display for the first time at the Furniture Mart showings here recently. It is being manufactured in two sizes, 7 and 9 cu. ft.

Other Admiral refrigerators, according to Mr. Siragusa, will be available in limited quantities by Feb. 15, and in sizeable volume by July 1. Shipments of Admiral's 1946 electric range models are scheduled to start in March.

An initial shipment of more than 100,000 radios and radio-phonographs is being made to 79 Admiral distributors. The shipments started last week, and according to company officials, should proceed rapidly enough for re-shipment by distributors to dealers before Feb. 5. Allocation of the sets by distributors to the company's 15,000 dealers was completed in December.

## G-E Garbage Disposal Units at Lower Prices

BRIDGEPORT, Conn. — Although General Electric Co.'s new electric sinks, dishwashers, and garbage disposal units are said to be considerably improved over prewar models, the new units will sell at from $20 to $70 less than previously, according to C. J. Enderle, manager of the G-E electric sink and cabinet division.

These prices are recommended national prices for delivery anywhere in the country, and units also are protected with a one-year guarantee.

Development of a "fully automatic single touch control" has reduced the 14 operations of the company's dishwasher to a single step. The housewife merely stacks the dishes in the unit, fills the detergent cup, closes the cover, and presses the switch, the company states.

Dishes are then pre-rinsed, washed, and double-rinsed, after which the cover of the dishwasher is automatically raised to permit the dishes to

*(Concluded on Back Page, Column 1)*

## Liquid Carbonic Plans $8 Million Expansion

CHICAGO — An $8,500,000 expansion program for the Liquid Carbonic Corp. has been announced by P. F. Lavedan, president.

Included in the program, part of which is already under way, is a $1,000,000 soda fountain factory and office building and a $800,000 ice cream cabinet and refrigerator plant.

The company's new plant at Morrison, Ill., occupying a 7-acre site, will produce ice cream cabinets, which are now being manufactured at Galesburg, Ill. The Morrison plant also will produce Liquid's entry into the home refrigerator field, the "Frostor."

This will include two units, a combination refrigerator and frozen food unit and an entire unit for freezing and storage of frozen foods.

*(Concluded on Back Page, Column 2)*

# 200,000 G-E, Westinghouse, GM Workers to Strike Jan. 15

## *Commercial Credit To Insure Life of Instalment Buyers*

BALTIMORE—Life insurance covering the unpaid balance on appliances purchased through instalment plans in the event of the purchaser's death has been arranged with Prudential Insurance Co. of America by Commercial Credit Co., announces Howard L. Wynegar, Commercial Credit Co. president.

This innovation in instalment financing on a national basis offers unusual sales opportunities in addition to protecting the buyer, the seller, and the finance company, Mr. Wynegar believes.

The life insurance plan should not be confused with property insurance covering loss or damage to the appliance, which is also provided under the CCC plan, points out Mr. Wynegar.

It is actually a group life policy covering the purchaser's unpaid balance in case of his death, it was explained. This means that the insurance company pays the deceased purchaser's instalment account in full, except any amount over 60 days past due, and the equipment is left free of any claim. An insurance certificate is supplied to the appliance buyer when his contract is purchased.

From an economic or banking standpoint, the inclusion of life insurance for the time buyer is fundamentally sound, said Mr. Wynegar, adding that "this plan removes an old threat to the fundamental structure of sound credit—death.

"We have found after 33 years experience that nearly 100% of instalment buyers have a definite willingness to meet their obligations," he declared. "The few who haven't been able to pay have generally been the victims of some unforeseen event—death included. We wish it were possible to protect our customers against every contingency, but at least this is a big step forward."

## *ASH&VE In Annual Meeting Jan. 28-30*

NEW YORK CITY — Fifty-second annual meeting of the American Society of Heating & Ventilating Engineers will be held Jan. 28 to 30 in the Hotel Commodore here. No meeting has been held since last January, the mid-year session scheduled for Montreal having been canceled because of war requirements.

There will be the usual technical and business sessions at this year's meeting, to be preceded by meetings of the A.S.H.V.E. council, the com-

*(Concluded on Back Page, Column 2)*

## Tube Manifold Corp. Will Produce Parts

BUFFALO—Tube Manifold Corp. has leased approximately 18,000 sq. ft. of space in the former Flexlume plant here and has started to set up a new division in these quarters for the manufacture of refrigeration parts. This unit will be operated in addition to the original Buffalo plant.

"The new division will require 75 to 100 additional employes," said President Charles D. Matthews. "A substantial amount will be spent for new equipment. A wonderful potential market exists in the refrigerator parts field and we may expand considerably further."

## *Electrical Union Spurns New Wage Increase Offered by G-E*

NEW YORK CITY—Despite a last-minute boost by General Electric Co. of its wage increase offer, officials of the United Electrical, Radio & Machine Workers of America (CIO) have announced that 200,000 members of the union would go on strike Jan. 15.

In addition to G-E, plants of Westinghouse Electric Corp. and electrical divisions of General Motors Corp will be involved.

Just before the union made its announcement of the strike, Charles E. Wilson, president of G-E, held a special press conference to reveal details of its new offer to employes.

The previous offer of a straight 10% increase in pay was changed, he said, to an offer of a 10-cent an hour boost for all employes earning less than $1 an hour and a 10% raise for those in higher brackets.

Mr. Wilson declared that G-E wanted to prevent a strike at all costs, although it did not agree with the union's theory, and this desire prompted the new wage boost offer. This offer was to take effect immediately upon union acceptance. The union, however, had demanded that the $2 a day wage boost be retroactive to October, when negotiations began.

Following Mr. Wilson's announcement of the new offer, union officials said they would be willing to discuss it further with G-E but doubted that the strike would be averted unless the G-E offer were considerably increased.

On the basis of the new G-E offer, a majority of those employes earning less than $1 an hour would earn more than 40% above their prewar income in the same jobs, declared

*(Concluded on Page 4, Column 4)*

## Philco Distributors Given Pricing Methods

PHILADELPHIA—Three methods by which distributors of the 10 models of Philco household refrigerators can determine their ceiling prices to dealers have been worked out by OPA and are described in Order 5, MPR 598. They are:

1. The ceiling price will be that which will give the distributor "the same percentage of the total dollar margin between the manufacturer's price to him and the dealer's price for resales to ultimate consumers in that zone as he received during the period Oct. 1-15, 1941, in connection with the sale of the most comparable model to the same class of purchasing dealer."

2. If the distributor cannot determine his ceiling price by the first method, it will be the maximum price "established under this order for sale by his 'most closely competitive seller of the same class.'" The order defines the "most closely competitive seller of the same class" as a distributor who (a) is selling the identical model of refrigerator to the same class of purchaser, and (b) is located nearest to the seller in the same zone.

3. If neither of the above two methods is applicable, the distributor will mark up the sum of the manufacturer's price to him and the cost of transportation from the manufacturer to him by 18.44%.

The order prescribes that where a distributor's territory lies in part in different zones, the zone price for his headquarters' city will prevail throughout his territory. The ordinary discounts, allowances, and other price differentials in effect on sales of similar articles are permitted.

# Inside Dope

By George F. Taubeneck

*(Concluded from Page 1, Column 1)*

## *Ships 'Betrayed' by Radar*

Sea captains in the year prior to Dec. 7, 1941, expressed amazement when our patrol planes flew out to observe them long before their presence in the vicinity of the Canal had been made known by customary radio communications. They did not know it, but they had been "betrayed" by long range radar detection.

The Army since the early 1930's had been carrying on intensive experiments in the development of radar for aircraft detection. In fact, it had designed its own power supply equipment, antennae, and other vital apparatus parts.

But the Signal Corps engineers required a radio tube powerful enough to make possible long range aircraft detection—and the tubes they had been using in their early experiments were incapable of producing such great power.

So in late 1937, the Signal Corps Laboratories at Fort Monmouth, N. J., asked Westinghouse to produce such a revolutionary tube; and a contract was executed calling for the delivery of 10 tubes in 13½ months.

It took 84 tries and a lot of sweat to build those first tubes, but the original contract was finished on time.

The assignment of designing the new radar tube was handed to Ilia E. Mouromtseff, Russian-born Westinghouse electronics engineer who in 1933 had beamed ultra short radio waves experimentally from an East Pittsburgh (Pa.) rooftop, and had "detected" automobiles which passed along the Lincoln Highway opposite the Westinghouse plant there.

Mr. Mouromtseff was not aware of it at that time, but his early experiments provided him with his basic theoretical information for radar tube design.

Those radio waves, behaving like light beams that day on the rooftop proved the uncanny ability of waves to deflect or bounce off a solid object, a basic principle of radar, and to be picked up again by a radar receiver as an electronic "echo."

The "sixth sense" of radar, which in effect has given the armed forces an extra set of eyes and ears, saved untold numbers of American lives, and is credited in some circles with changing the entire course of the war.

## *Trying Assignment*

Even with the many valuable suggestions offered by the Signal Corps, Mr. Mouromtseff's assignment was one to try the most experienced radio engineer.

As he recounted, "my associates, George M. Dinnick, W. G. Moran, and I really lost plenty of sleep during our experiments from January to September, 1938.

"We realized at the outset that tubes of existing designs simply would not produce thousands of watts at the extremely high frequencies needed. Radical changes were necessary, so we proceeded to violate just about every known rule of radio tube design.

"When the production engineers took a look at our new designs, they doubted that such a tube could work. But that was nothing compared to the reaction of the workmen in the shop. Veteran glass blowers, many of whom had learned their trade from their fathers, flatly stated that this design was impossible to make in any quantity. But they had to swallow their words later because efficient mass production was achieved, and they helped us to accomplish this mass production," Mr. Mouromtseff pointed out.

The manufacturing problem primarily was to develop a tube of radically different geometrical and physical characteristics, and a tube which was capable of producing high power peaks never experienced before.

For example, the tube design required the most difficult copper-to-glass "feather edge" seals known to glass craftsmen up to that time or since.

Furthermore, the tube called for operation of peak, momentary currents which demanded a specially treated, rugged tungsten filament fabricated in such a way it would withstand five times the voltages then believed possible.

Ultimately, the manufacturing techniques were improved to the point that one operation, that of exhausting the tube of air and unwanted gases, originally a four-day task, was reduced to a few hours.

But in the pioneer manufacturing period, progress was slow. The manufacturing equipment, as well as the tube, had to be designed and built over and over again.

After some alterations, minor production changes and a lot of "first class worrying," the first four tubes were delivered to the Signal Corps in September, 1938.

At first the tubes failed to function properly at the frequency required in the available equipment. So, special laboratory equipment was set up, and soon the tubes worked according to plan. During the next year, in cooperation with the Signal Corps engineers, the operating difficulties were eliminated one by one.

With Westinghouse engineers assisting, the Army ran approximately 40 field tests to put the tube and the radar set itself through all conceivable paces. These tests were conducted behind blinds on a hill near Atlantic Highlands, N. J., within earshot of the Atlantic Ocean surf. Even the armed guards who admitted the Westinghouse men to the trials were unaware of the confidential character of the activity.

## *Gasoline Tanks as Targets*

In order to calibrate the radar "rig," gasoline tanks at the end of Staten Island and the Empire State Building in New York City were used as "targets." A radar beam was "squirted" at these fixed targets, whose direct air range was known, and calibrations were made on the basis of their electronic "echoes."

Later, the "proving ground" tests were conducted at night with the help of big Army searchlights. A pilot was instructed to take his plane aloft, to dart around as much as he chose in the darkness, while the searchlight shutters were closed.

Minutes passed, the shutters were opened, and then the light, which had been rotated in harmony with the radar "eye," was turned on in full brilliance. The plane, in the middle of the searchlight beam, proved the accuracy of the blind calculations.

What had happened was that the electronic "eyes and ears" of the Army, piercing darkness, fog, rain, or other natural obstacles with equal facility, had a continual "bead" on the plane, both for distance and direction.

This "bead" was in the form of a visual indication on the cathode ray oscilloscope screen which is part of the radar equipment, the range and direction of the plane being indicated automatically.

## *Tests in Below Zero Weather*

Some of the tests at Atlantic Highlands were conducted in 18 below zero weather, some had unusual results.

On one occasion those in charge of the trials recognized a "double image" and had concluded that the equipment must be out of balance until a check with the Coast Guard established that the plane on which a radar "fix" had been made meantime was joined by another plane for a side-by-side ride into Mitchel Field, N. Y., from a point over the New England shoreline.

Another time, a "fix" was made on a test plane flying above Montauk Point, Long Island. Suddenly the electronic echo increased greatly in intensity. The observers wondered about the unexplained change in reception.

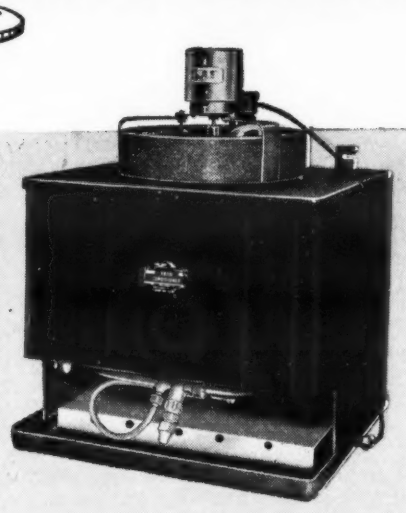
Radio contact was established with the pilot, and he cleared up the "mystery" by explaining that he had just banked his ship preparatory to turning around and heading back home—a maneuver that greatly increased the radar "echo" since more of the plane's surface was exposed to the radar waves in the vertical banking position.


By comparison—You'll buy PAR
REFRIGERATION EQUIPMENT
WRITE FOR CATALOG
Lynch MANUFACTURING CORPORATION
DEFIANCE, OHIO, U. S. A.



WHY WAIT? GET SET FOR A BIG YEAR WITH THESE NEW 1946 PROFIT MAKERS

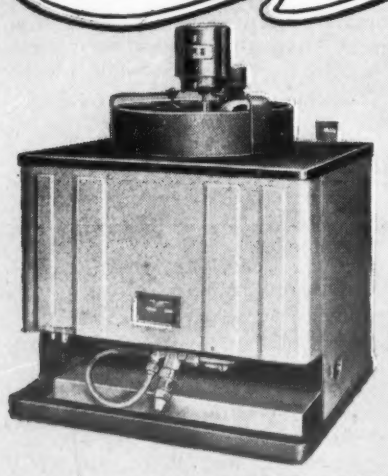
AMCOIL Jobbers can deliver RIGHT NOW!



UTILITY FOOD CONDITIONER
Nothing else like it! A "natural" for profits because it does a *double job:* cools and prevents dehydration, too! When prospects know the Food Conditioner story—they BUY. *Tell* it to 'em:

ONLY with *the AMCOIL built-in humidifier,* plus *36° F. temperature,* can foods be properly preserved. ONLY an AMCOIL FOOD CONDITIONER does this double job. *Sell* it to 'em!

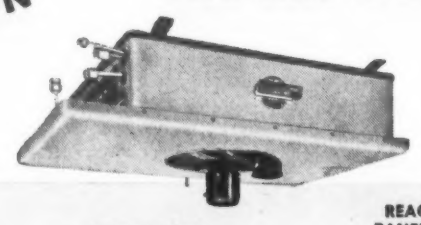
The AMCOIL Food Conditioner will pay for itself over and over again by preventing shrinkage of perishable foods . . . by eliminating the meat-trimming that trims profits . . . by retaining the natural freshness and bloom of meats. The Market is BIG. The Profits are BIG. Get set for a BIG Year. Order from your AMCOIL Jobber Now!



UTILITY DOWN-DRAFT UNIT
Push this forced-draft unit for efficient cooling of packaged and bottled goods, where dehydration is not a factor.

NOW IN PRODUCTION

TWO-WAY Ceiling-Mounted Cooling Units



Discharges cooled air horizontally in two directions along the ceiling. Sizes adaptable for reach-in boxes and walk-in coolers. Write for Bulletin.

OTHER FAST-MOVING AMCOIL PROFIT MAKERS

Licensed Under Latent Cooler Patents · Pat. Pend.

MANUFACTURERS' REPRESENTATIVES
J. J. Madden, 212 Madison St., Dedham, Massachusetts
William D. Keefe, Chaffee, New York
E. J. Oliphant & Co., 505 Uhler Bldg., Marion, Ohio
Jordy Engineering Co., Inc., 813 Howard Ave., New Orleans, La.
Robbins-Greenwood Co., 3104 Main St., Houston 4, Texas
Ernest Darwin Corporation, P.O. Box 2654, Charlotte 1, North Carolina
A. J. Nelson Co., Box 2244, Denver, Colo.

AMCOIL AMERICAN COILS CO.
23-27 LEXINGTON STREET · NEWARK, N. J.

DISTRICT OFFICES
Philadelphia Office: M. H. McTurk, Mgr. 3510 Spring Garden Street
Chicago Office: H. C. Moore, Mgr. 215 W. Ontario Street

808



Attention Manufacturers

We build freezers and boxes to your specifications on subcontract basis, all inquiries kept confidential.

Box 1871, Air Conditioning & Refrigeration News



NATIONALLY ENDORSED

A job done the Mastercraft way Saves many a dollar Every day

MASTERCRAFT ADJUSTABLE REFRIGERATOR PAD

"A penny saved is a penny earned"—You'll save many a penny and dollar too if your moving equipment includes a Mastercraft Adjustable Refrigerator Pad and Carrying Harness. They're doubly economical because of their adjustability to any size cabinet. The pad, sturdily constructed to furnish protection from scratches and mars is priced at $11.75 each, Harness at $8.50 each.

Attractive lettering of your name on pad at $2.00 each extra.

Write today for complete folder and prices on pads for refrigerators, home freezers, washers, ironers, ranges, radios; also furniture pads and protective slipcovers.

BEARSE MANUFACTURING CO.
Incorporated 1921
3815-3825 Cortland Street
Chicago 47, Ill.



for SULFUR DIOXIDE and METHYL CHLORIDE

See Your ANSUL JOBBER

These Ansul Refrigerants have a long record for DRYNESS, PURITY and DEPENDABILITY. You will like Ansul's friendly service.

*REG. U.S. PAT. OFF.

ANSUL CHEMICAL COMPANY
MARINETTE, WISCONSIN
Distributors for Kinetic's "Freon-11," "Freon-12," "Freon-21," "Freon-22" and "Freon-113"



Members of the Refrigeration Equipment Wholesalers Association

Your refrigeration parts and supply house in Central New York and Northern Pennsylvania

TED GLOU
CENTRAL SERVICE SUPPLY CO.
516-18-20 E. Erie Blvd.., Syracuse, N. Y. Phone 5-4000
209-211 Jefferson Ave., Scranton, Pa. Phone 3-4000

# Frigidaire is on the Air

## with a brilliant new RADIO SHOW

### Top Movie Stars... Hit Shows of Hollywood!

World-famous movie stars . . . outstanding movies of our day—millions of families will hear them, and at the same time hear powerful, convincing selling messages on Frigidaire appliances in this . . .

**Half-hour Program of**

## DRAMATIC ENTERTAINMENT

**Every Week — Full CBS Network**
**147 Stations — Coast-to-Coast**

**Every Sunday**
**2:30 p. m., E. S. T.**

The Greatest Advertising Program in Frigidaire History... Spearheaded by this Outstanding New Radio Show . . . Supported by Continued Heavy Advertising in . . .

WOMEN'S MAGAZINES . . . HOME SERVICE MAGAZINES . . . NATIONAL WEEKLIES . . . FARM AND SMALL-TOWN MAGAZINES . . . LEADING NEWSPAPERS . . . HOME ECONOMICS MAGAZINES . . . COMMERCIAL TRADE MAGAZINES. *Plus* DEALER HELPS FOR NEWSPAPER AND RADIO ADVERTISING . . . DIRECT MAIL . . . MOVIES . . . BOOKLETS . . . UNSURPASSED POINT-OF-SALE ADVERTISING

It all adds up to a tremendous advertising program designed to build still greater preference for Frigidaire; announce new Frigidaire products; tell all types of homemakers, in all parts of the country, why they will...

BE TWICE AS SURE WITH TWO GREAT NAMES . . .
FRIGIDAIRE and GENERAL MOTORS

**FRIGIDAIRE**
Division of
**GENERAL MOTORS**
DAYTON 1, OHIO • LEASIDE 12, ONTARIO
REFRIGERATORS • RANGES • WATER HEATERS
KITCHEN CABINETS • HOME FREEZERS • ICE CREAM CABINETS
COMMERCIAL REFRIGERATION • AIR CONDITIONERS
BEVERAGE, MILK, AND WATER COOLERS

# Westinghouse Was In Production on Many Appliances by End of 1945, Bucher Says

PITTSBURGH—Despite most extensive reconversion and re-arranging in the $11,500,000 Westinghouse appliance division expansion program at Mansfield, Ohio, and Springfield, Mass., the plants were in production by the end of 1945 on many appliances, including refrigerators, electric ranges, and the automatic washer, declared Westinghouse President George H. Bucher in a year-end statement.

Also in production now is a new Westinghouse product—the "Bug Bomb" aerosol insectide dispenser. Two other new Westinghouse developments are slated for production—electric home heaters and gas turbine aircraft engines, both jet propulsion and propeller drive.

Westinghouse now has the greatest production capacity in its 60-year history, said Mr. Bucher, who added that during the last year the company provided $61,000,000 for reconversion and expansion of its plants. More than $8,000,000 has already been spent, with the remainder to go in the next 12 months, he said.

Average output can be more than doubled over any prewar year as the result of this expansion program, according to Mr. Bucher.

Air conditioning development and production will be greatly expanded in its new headquarters in Boston, where Westinghouse recently acquired the B. F. Sturtevant Co. Principal air conditioning activities will be integrated with those of the Sturtevant company, it was announced. In this plant Westinghouse will also produce for home use the Precipitron, the electrostatic air cleaner.

Production of medium-sized electric motors will be centered in a new plant at Buffalo, leaving more room at the main works in East Pittsburgh, Pa., for expansion of heavy apparatus manufacture.

Production capacity of the elevator division, headquartering at Jersey City, N. J., will be increased by the recent purchase of the Atlantic Elevator Co. in Philadelphia and the moving of the air conditioning division to Boston.

Home heaters will be produced in a plant at Emeryville, Calif., the expected market for these units being principally in the Pacific northwest and the mid-south, said Mr. Bucher.

A $10,000,000 plant and research laboratory in Philadelphia for the production of gas turbine engines is nearing completion. Mr. Bucher expects this plant to turn out $10,000,000 to $15,000,000 worth of engines annually and provide employment for some 2,000 people.

## Reliance Regulator Co. Building New Factory

ALHAMBRA, Calif.—A new factory building is being erected at 1000 South Meridian Ave., Alhambra, Calif., for the Reliance Regulator Co., at a cost of $25,000, according to a recent announcement.

# Electrical Workers to Strike on Jan. 15 In Plants of G-E, GM, Westinghouse

*(Concluded from Page 1, Column 5)*

Mr. Wilson in a prepared statement.

More than 50,000 G-E employes are now working more than 40 hours a week, he said and predicted that "if we can have industrial peace the majority of General Electric's production employes in 1946 can work 44 to 48 hour weekly schedules with corresponding overtime pay."

Mr. Wilson reiterated a previous statement that there was nothing in G-E's immediate economic future that would justify even the 10% wage increase.

He stated, however, that G-E sincerely desired to "leave no stone unturned that would prevent loss and hardship to our more than 130,000 employes, who will lose their income if the strike is called; prevent loss and hardship to the additional thousands of workers in the plants of our customers and suppliers and to our many dealers and distributors; prevent injury to the members of the public generally, millions of whom would be handicapped needlessly by future delays in obtaining appliances and other items needed in homes and businesses; help prevent the smashing of the entire economic structure of the United States through the confusion caused by failure up until now to work out operable plans for meeting requirements of this vitally important reconversion era."

Referring to previous statements that G-E would be forced to ask OPA for increased prices if wages were raised and thus contribute to inflationary trends, Mr. Wilson said:

"Therefore, though it is conscious of substantial widespread wage increases to which it is contributing, nevertheless this company feels that the price offered as a possible aid to industrial peace on at least one front is in order if it will serve at all in helping sustain the country's general welfare at this critical period."

Westinghouse has made no offer of a wage increase to the union, but, instead, has suggested that take-home earnings be increased through a 45-hour work week, declared W. G. Marshall, vice president of Westinghouse in Pittsburgh.

According to Mr. Marshall, Westinghouse faces the strike with the "greatest regret," but with the conviction that it had done "everything in its power" to prevent it. He amplified this with the following statement:

"The position of Westinghouse in this wage dispute is based on three factors:

"1—Westinghouse already pays better than the average of its competitors and the industry in general.

"2—Westinghouse proposed to the UE that a 5½ day week be installed where possible. This would apply to approximately 90% of our employes and would mean a 15% increase in wages for a 10% increase in hours.

"3—Westinghouse offered to sit down each month with the union representatives and continue discussions. We proposed to do this for six months, within which time we can determine whether a pay increase can be granted.

"The company is still ready to negotiate this demand with the union, and the company did not break off negotiations. Responsibility for a strike which will throw tens of thousands of employes out of work rests squarely on the leadership of the UE."

There have been no comments from the electrical divisions of General Motors regarding the union plan to strike. GM had offered a 13½-cent hourly increase, which the union had said was not acceptable even though it had continued discussions with the corporation.

Of the 200,000 union members involved in the strike, half are employes of General Electric plants, 75,000 work for Westinghouse, and 25,000 are in the electrical divisions of General Motors. The many plants are located in all parts of the country.

Among the General Electric plants which will be affected by the strike are those in Bridgeport, Conn.; Bloomfield, N. J.; Pittsfield, Mass.; Schenectady, N. Y.; Erie, Pa.; Fort Wayne, Ind.; Oakland and Ontario, Calif.; Cleveland, and several others.

Westinghouse plants to be involved include, among others, those at East Pittsburgh, Pa.; East Springfield, Mass.; Mansfield and Lima, Ohio; and Bloomfield, N. J.

Frigidaire Division and Delco Products Division of General Motors in Dayton, Ohio, will be hit by the strike, along with GM operations in New York City, and Warren and Yellow Springs, Ohio.

JAY CEE
SILICA GEL
A superior dehydrant
REFRIGERATION GRADE
JOLIET CHEMICALS, LTD Factories: JOLIET, ILL.
be sure
YOUR REFRIGERANT
IS DRY
use
JAY CEE
SILICA
GEL
Get that "last drop of water" out of your refrigerant. Use Jay Cee Refrigeration Grade Silica Gel in your dehydrating cartridges. By careful comparative tests Jay Cee Gel has been found to be a superior dehydrant.
It instantly dries methyl chloride, sulphur dioxide, freon and other refrigerants. Prevents corrosion and ice formation. It is chemically inert . . . removes acids from the refrigerant . . . is not affected by oil . . . has high particle strength and does not break down in use. Because of great pore surface area (1 cu. in. = 50,000 sq. ft.) has highest moisture adsorption capacity. Developed especially for the refrigeration industry under strict laboratory control. Write for complete bulletin and prices.
JAY CEE
JOLIET CHEMICALS, LTD.
INDUSTRY AVENUE JOLIET, ILLINOIS

NIBCO WROT
AND CAST
VALVES AND FITTINGS
*for Refrigeration*
NORTHERN INDIANA BRASS CO.
ELKHART, INDIANA

BAKER
ICE MACHINE CO. INC.
OFFICE
RECEIVING DEP'T. ONE BLOCK EAST
SHIPPING DEP'T. ONE BLOCK NORTH
NEWS IS BEING MADE AT
BAKER
It's reconversion plus at BAKER. NEW management is adding NEW tooling— NEW designs— NEW products— NEW sales and service facilities. To the tradition of BAKER Dependability, NEW pluses are daily being added. Expect big things—and watch for them.
BAKER ICE MACHINE CO., INC.
16th and Evans Streets • Omaha 1, Nebraska
BAKER REFRIGERATION AND AIR CONDITIONING EQUIPMENT

A MAJOR PART OF OUR WORK IS REDESIGNING TO MAKE ANY ITEM ECONOMICAL TO MANUFACTURE IN PRODUCTION

WALL WIRE PRODUCTS COMPANY

11333 GENERAL DRIVE
PLYMOUTH, MICHIGAN

*Makers of* STAINLESS STEEL AND RETINNED REFRIGERATOR SHELVES AND WELDED WIRE PRODUCTS

## Bonus Plan 'Fairest' to Salesmen, Survey Shows

NEW YORK CITY—A pilot survey conducted by the Sales Executive Club of New York found that the bonus plan is regarded as the "fairest" form of compensation to salesmen, with drawing account, straight salary and straight commission following in that order.

Made public in conjunction with the First National Marketing Forum, the figures showed that in general 104 replies favored the bonus plan, 23 drawing accounts, 18 straight salary, and 14 straight commission.

It was announced that the survey would subsequently be incorporated in a nationwide study to be conducted by the National Federation of Sales Executives.

The survey found that 117 members of the sales executives club were satisfied with their own compensation plan, while 51 were dissatisfied. Forty-two said they were planning changes.

Eighty-nine members assumed the right to change salesmen's compensation, while 74 did not. A total of 123 reported salesmen were consulted prior to any changes, while 43 indicated they did not consult their men. No maximum limit on salesmen's earnings was placed by 143 concerns, while 27 have such a limitation in effect.

The survey data also covered seven other categories, including size of salesmen's territories, credit for orders, working conditions, recognition-upgrading-security, expenses, employment and training, and "pressure."

## *Veterans Told of Jobs In Refrigeration Field*

DES MOINES, Iowa—A heavy demand for trained hands in the field of refrigeration and air conditioning was depicted at a clinic here at the Polk County Veterans' Information Center.

"There is an unlimited opportunity for those trained for sales, service, installation, and operation of home and commercial units," the 75 Des Moines veterans attending the clinic were told.

Serving on a panel for discussion of opportunities in the field were four men identified with refrigeration and air conditioning—L. L. Lally, B. F. Woody, Norman Dayman, and Stephen McKinney.

Veterans were assured that both refrigeration and air conditioning would expand greatly in coming years, with proportionate increases in staffs to sell and service the units.

Training of veterans under the GI Bill of Rights was commended by Mr. Lally, who said the apprentice system of learning was "one of the best yet devised."

Employers must become acquainted with the apprentice plan, the panel observed, before there will be many training spots open for veterans.

## Philco Changes Name of Distributing Subsidiary

PHILADELPHIA—Board of Directors of Philco Corp. has changed the name of Philco Radio & Television Corp., a wholly owned subsidiary which handles the national distribution of Philco products in the United States, to Philco Products, Inc.

"The greatly expanded scope of Philco operations, which now includes household refrigerators, freezers, air conditioners, and radar equipment, as well as radio receivers and television, makes it advisable to give a broader name to our sales company," John Ballantyne, president, said in explaining the action.

## *Hunt's Adds Appliance Dept. for First Time*

DALLAS, Tex. — Hunt's Department Store here will open its new appliance department in January, according to buyer Jerry Nettles, who has been appointed to manage the shop.

Although the Hunt store handles a complete line of home-furnishings it has never before carried major appliances. The new department, built in answer to the general demand for home appliances, will be located on the third floor in a prominent position between floor-coverings and furniture. The sales crew will include both inside and outside men, according to the management.

## New San Diego Firm

SAN DIEGO, Calif.—King's Refrigeration Service is the firm name under which Robert E. Kingsolver has published a certificate that he is conducting business at 209 W. "E" St. here.

## Dealers Urged Caution Despite Lush Prospects

FARGO, N. D.—Despite the vas potential postwar market for refrig erators, washing machines, radios and other appliances, dealers wil need foresight and conservative busi ness sense, it was declared by Byro Hanson, sales manager for Norther States Power Co., in an addres before the North Dakota Electrica Contractors Association.

Predicting that many plants whic made war products will turn to elec trical appliances, Mr. Hanson sug gested that there will be a heav mortality among them, reminiscen of the 1929-40 period. He recalle that at that time there were 88 companies manufacturing radios i America, of which 742 fell by th wayside. There were 75 firms mak ing electric refrigerators and th field narrowed to 35, with eight com panies having 80% of the market.

Mr. Hanson urged those planning to handle electrical appliance dealer ships to:

1—Take dealerships only of sound stable companies which will still b in business after the antcipated two year buying spree is over.

2—Stick to a few, reputable dealer ships—don't try to represent th entire field.

3—Cater to the REA-wired farm market—the big market of the future.

4—Train competent salesmen and do a good job of merchandising selling, and servicing.

5—Make a fair price range and stick to it. Cutting prices, together with unwise trade-ins, credit losses and a few other contingencies can lead to a flow of red ink.

## Liquid Carbonic Offers Exchange of Stock

CHICAGO — Common stockholders of Liquid Carbonic Corp. here are being offered 72,810 shares of $100 par value 3½% cumulative preferred stock recently registered with the Securities and Exchange Commission.

Available at the rate of one new share for each 10 shares of common stock, the preferred is convertible into common prior to Feb. 1, 1956. Underwriters will offer publicly unsubscribed shares.

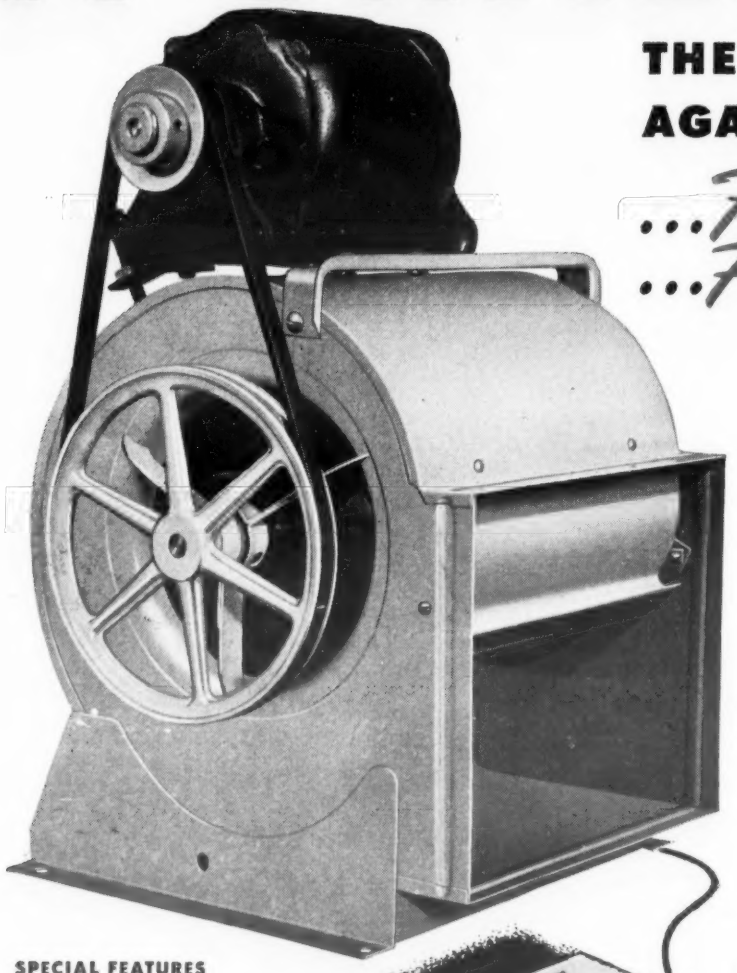
All outstanding 4½% series A cumulative preferred stock will be redeemed at $107 a share by use of $3,101,823 of proceeds, with the balance tentatively earmarked for use in completion of a long-range expansion program.

## *Fulmer Named Sales Head Of Columbia, S.C., Firm*

COLUMBIA, S. C. — Appointment of Eugene E. Fulmer, of Columbia, as sales manager of its electrical appliances, heating, and air conditioning divisions was announced by the Home Heating & Appliance Co. of Five Points.

Before serving with the technical training command as an instructor at the Columbia Army Base, Mr. Fulmer was with the Hudson-Carolina Motor Co.'s sales credit department for seven years.

A CHALLENGE



THE NEW LAU BLOWER AGAINST THE FIELD

...Performance-wise!
...Price-wise!

• We've designed and redesigned—tested blowers—tested wheels—tested bearing supports. Based upon these exhaustive tests, we've engineered the new Lau Series "A" Blower for greater mechanical strength . . . greater efficiency . . . in a more compact unit . . . lending itself to mass precision production . . . at STILL LOWER COST THAN EVER BEFORE. New 3-point suspension-type bearing and bracket form an integral part of the shroud—frictionless, self-aligning—completely encased in Neoprene. New 1-piece motor mounting applicable to any angle discharge—easily convertible, rear to top or vice versa, by simple use of two sheet metal screws. Many other new and exclusive features. SMALLER OVERALL SIZE *fits more jobs.* The Series "A" Blower conforms perfectly with manufacturers' ideas today of building smaller cabinets, yet nothing in our new unit is sacrificed—instead, we offer a more efficient blower. Write for complete description, dimensions, performance data, and prices.

SPECIAL FEATURES
Patents Applied For

Amazingly LOW COST
We engineered this New LAU Blower and geared a production line to mass produce it at unheard of low unit cost. NOW, no one can afford to buy components for assembly —waste labor—secure uniformless results of hand work. Buy the complete assembly from LAU for LESS!

*New* CENTER-SUSPENSION WHEEL
• Exhaustive tests have proved the center-suspension wheel is still far superior to any other type of construction. The New LAU Series "A" Blower Wheel has more advantages . . . greater mechanical strength . . . truer concentricity . . . greater air flow into the wheel (than other wheels of similar diameter and blade length). DETAILS GLADLY SUPPLIED TO INTERESTED PARTIES UPON REQUEST.

THE LAU BLOWER COMPANY
DAYTON 7, OHIO, U. S. A.
WORLD'S LARGEST MANUFACTURER OF FURNACE BLOWERS
*Engineers and fabricators of general Air Handling Equipment • Single Inlet and Double Inlet Blowers • Propeller Fans • Accessories*

EVOLUTIONARY IN ENGINEERING
REVOLUTIONARY IN DESIGN

COOLSTREAM
Capacity Counts

COOLSTREAM ELECTRIC WATER COOLERS have a capacity margin surpassing all previous water cooler performance.

Add superlative engineering and design, low operational cost plus high efficiency and you have *Coolstream*—the water cooler of the year.

*Send for Catalog*

THE COOLSTREAM CORPORATION
240 BUTLER STREET • BROOKLYN 17, NEW YORK

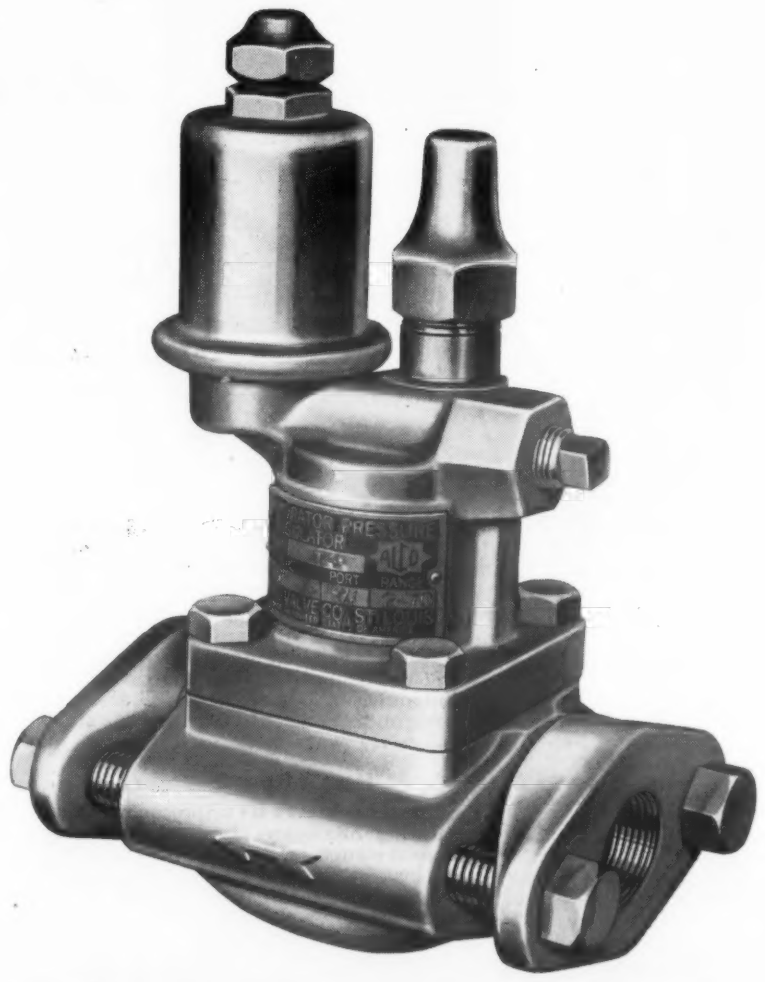
# ALCO EVAPORATOR PRESSURE REGULATORS ACT LIKE *"Governors"* ON A COOLING SYSTEM

When the pressure starts to rise or drop, the valve automatically adjusts the flow to restore the evaporator pressure to its predetermined point, independently of sudden changes in Load or Suction Pressure. It assures constant coil pressure and tends to prevent "flood-back".

Principal applications: Two-Temperature Jobs; Water Fountains, Beer and other Beverage Coolers—to keep their temperature at the

**ZONE OF ZEST**
**WHERE DRINKS TASTE BEST**

May we send you our Bulletins on EPR and Evapotrol Valves?



ALCO

Designers and Manufacturers of Thermostatic Expansion Valves; Pressure Regulating Valves; Solenoid Valves; Float Valves; Float Switches.

## ALCO VALVE CO.

853 KINGSLAND AVE. • ST. LOUIS 5, MO.

When it's an OASIS, you're sure of the *best* in drinking-water satisfaction. OASIS Electric Water Coolers lead the feature parade — in low-cost operation . . . sturdy, space-saving construction . . . "tailored" beauty of design . . . sanitary, splash-free bubbler action and many other points of value. OASIS coolers are designed and built by EBCO — their built-in advantages are the fruit of EBCO'S 20 years of pioneering leadership in the industry.

"It's an OASIS!"

The EBCO MFG. CO. 401 W. TOWN STREET COLUMBUS 8, OHIO

# *Plastics Become Increasingly Important In Appliance Field, Exhibition Shows*

## Besides Serving as Parts, Plastics Now Aid In Appliance Manufacturing

By Ross Potter

DETROIT—Increasing numbers of plastic parts are going into new refrigerators and other major appliances, it was shown in the wide range of displays at the second annual Plastics Exhibit, held in Detroit's Convention Hall Jan. 7-11.

The variety of different materials turned out by the plastics industry already is great enough to confuse the non-technical observer, and the variety is steadily growing. The many uses to which plastics are being put is even more impressive.

### *Wider Uses Today*

The use of plastics that would not transfer heat or electricity was established before the war, but today they have assumed wider uses based upon economy of production and flexibility of application.

The great majority of modern refrigerators use plastics almost exclusively for such interior fittings as facing and decorative panels, indicator and control dials, protective stripping, and manipulation handles.

Because they will not retain the low temperatures that metals will, plastics are in demand for those parts that must be touched or moved by hand within the interior.

Plastic parts for refrigerators are made by such companies as Monsanto (Springfield, Mass.), Bakelite (New York City), B. F. Goodrich (Cleveland), Chicago Molded Products (Chicago), Continental Can (Cambridge, Ohio), Dow Chemical (Midland, Mich), and Standard Products (Detroit).

In addition to these, refrigerator manufacturers like General Electric and Westinghouse have their own extensive plastics laboratories and plants.

Most of the plastics used in refrigerator interiors have characteristics of high resistance to warping or shrinking and of losing none of their strength under conditions of low temperature, of resisting food stains and the abrasive action of cleansers, and of being adaptable to mass production.

Factors of high resistance to heat or electricity occur frequently in the plastic materials used in toaster handles and bases, table model radio shells, vacuum cleaner motor housings, electric range handles and controls, washing machine agitators, and the handles for coffeemakers and electric irons.

### *Forming Varies*

The parts themselves vary in material and in the manner in which they are formed. Most cabinet units and major panels are made of phenolic, through a process of laminated molding.

Face plates, often transparent and decorative as well as functional, usually are compression molded. Appliance plugs and buttons or knobs are cold molded from various kinds of organic binders, identifying cards explained.

Also displayed were examples of plastics that are used indirectly in the use or production of different appliances. Westinghouse, for instance, in the formation by multiple molding or "stacking" of the steel inner panel for its refrigerator door, uses a special plastic layer between the successive steel sheets that allows the exact pressure and processing necessary to this mass production method.

Another indirect contributant is the small elastic sleeve, developed by G-E, with which open tubing is protected until it reaches the job. The tiny plastic sleeve becomes soft upon application of a solvent that evaporates almost as soon as the sleeve has been capped over the open tube end, leaving the seal tough and inelastic.

A completely plastic housing made by Continental Can is shaped like a cylindrical grille, with the louvers so angled that a blower fan keeps air circulating uniformly throughout the room. Black in color, the assembly is light and portable.

The same firm makes a plastic automobile battery casing, tough and acid-resistant but light in weight.

A new plastic material, silicone glass laminate, was being shown publicly for the first time by G-E. Made from layers of glass cloth treated with a silicone resin and subjected to heat and pressure, its high resistance to heat will open new fields in electrical insulation, the company believes.

It has withstood temperatures of 485° F. continuously for a week, according to Dr. J. J. Pyle, director of G-E's test lab. The new plastic's greatest usefulness, he believes, will be in electrical equipment such as motors, circuit breakers, induction heaters, high frequency oscillators, and for insulating fire-fighting equipment itself.

## Crosley Distributors See 1946 Product Line-up

CHICAGO—A preview of some of the products to be produced in 1946 by The Crosley Corp., Cincinnati, was given last week to about 150 Crosley distributors and their keymen by a group of Crosley executives at a one-day conference at the Stevens hotel here.

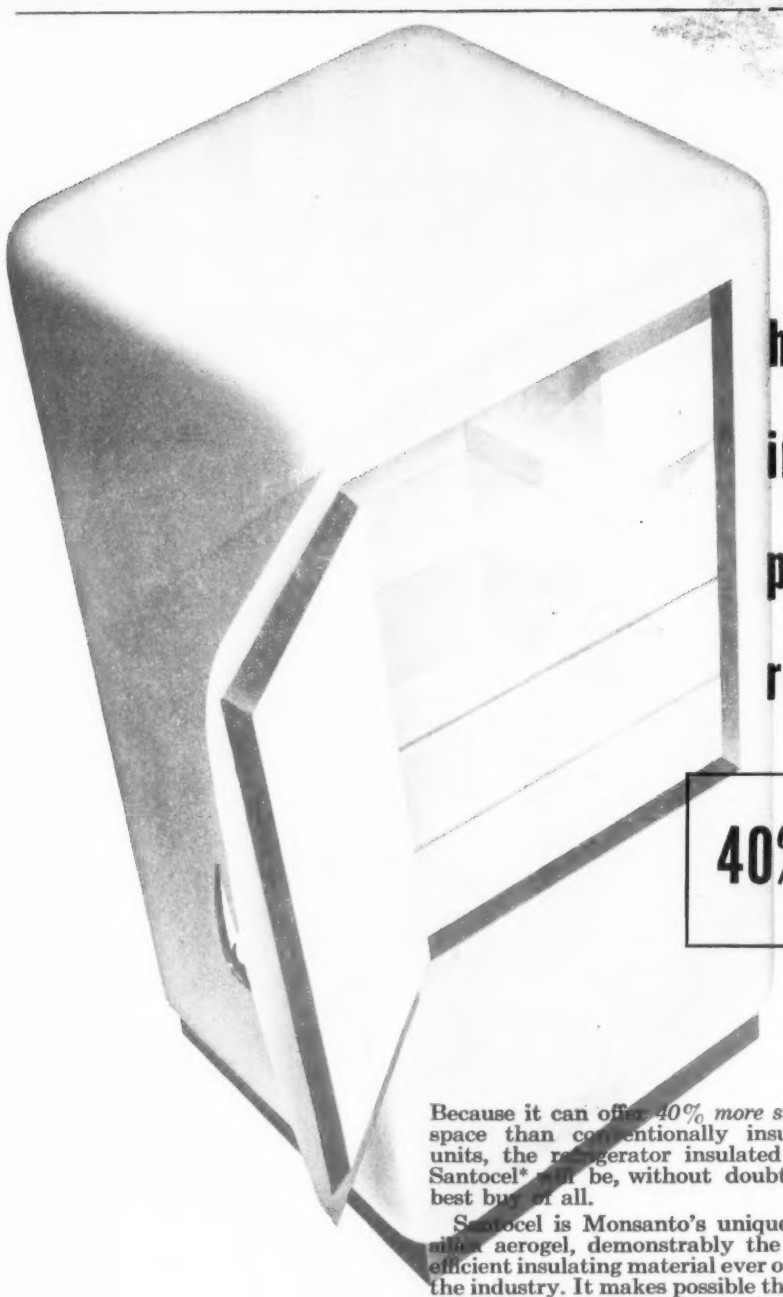
The showing was for Crosley distributors only, and it was pointed out that no announcement of the forthcoming products would be made to the public at this time, as several of them are still in the development stage.

R. C. Cosgrove, vice president and general manager, manufacturing division, The Crosley Corp., and vice president in charge of sales of The Aviation Corp., spoke to the distributors on "The Crosley-Avco Picture and Prospects for 1946." S. D. Mahan, vice president and general sales manager, The Crosley Corp., is presiding at the conference and talked to the distributors on "The Crosley Advertising and Promotion Picture."

## *Kennedy Heads Wesco Branch at Dayton*

DAYTON, Ohio—Charles B. Kennedy, for the past year appliance manager of Westinghouse Electric Supply Co.'s branch here, has been appointed branch manager, announces L. A. Pixley, West Central district manager.

After service in World War I, Mr. Kennedy spent 26 years as manager of merchandise and sales with various electrical concerns and a public utilities company before joining Westinghouse Supply as district radio sales manager of the Columbus, Ohio, branch.



here's the best buy in postwar refrigerators

40% more storage space

Because it can offer 40% *more storage* space than conventionally insulated units, the refrigerator insulated with Santocel* will be, without doubt, the best buy of all.

Santocel is Monsanto's unique new silica aerogel, demonstrably the most efficient insulating material ever offered the industry. It makes possible the first basic improvement in refrigeration since before the war.

**Here's How It Works:**

Santocel achieves its unprecedented insulating efficiency through its highly porous structure. This new form of silica is actually 90% air, trapped in spaces one-millionth of an inch in diameter, by walls one ten-millionth of an inch thick. While the air may move about within these microscopic cells, the *distance* it may travel is infinitesimally small . . . and the heat conductivity therefore is kept at the very minimum.

Santocel is not only applicable to domestic refrigeration, but also to all types of commercial and industrial applications, especially to refrigerated transport. In fact, wherever the savings in space and weight are important . . . and where insulating efficiency is most critical, Santocel has the most to offer.

You are invited to send for complete technical data on Santocel . . . also samples and answers to your own specific questions. Address: MONSANTO CHEMICAL COMPANY, Merrimac Division, Everett Station, Boston 49, Mass.

With Santocel it is possible to make refrigerator walls and doors approximately half as thick as with ordinary insulating materials. This means that *without loss of efficiency*, and *with the same over-all dimensions*—a refrigerator with a 6.5 cu. ft. capacity, may, with Santocel, have 2.5 *more* cu. ft. storage space or 9 cu. ft.!

Think what this saving means, too, to planes, refrigerated trucks, boats, railway cars . . . less weight, less space, *more* payload.

*Santocel: Reg. U. S. Pat. Off.

MONSANTO CHEMICALS

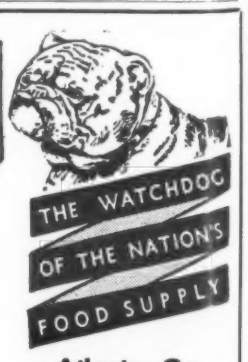
SERVING INDUSTRY . . . WHICH SERVES MANKIND

LARKIN

MECHANICAL REFRIGERATION PRODUCTS

Humi-Temp Forced Convection Units—Patented CROSS-FIN-COILS—Bare Tube Coils—Zinc Fused Steel Plate Coils—Disseminator Pans—Heat Exchangers—Evaporative Condensers—Instantaneous Water Coolers—

LARKIN COILS, 519 Memorial Dr. S.E. Atlanta, Ga.




WANTED

Well-known manufacturer of refrigerating and air conditioning products has openings for the following:

DESIGNERS AND APPLICATION ENGINEERS—Should be experienced in the industry.

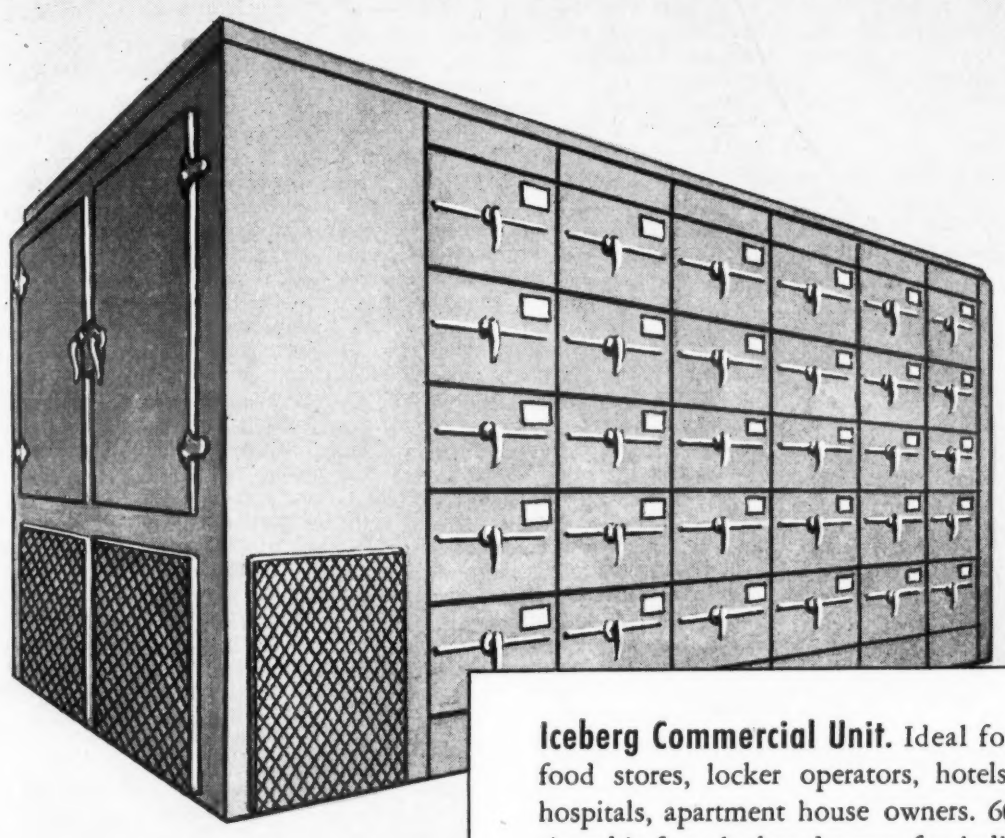
DRAFTSMEN—Experience in the industry not essential.

METHODS ENGINEERS AND ESTIMATORS—Experienced in the stamping, forming, cutting and assembling of metal components. Excellent opportunity for permanent connection. Location Chicago. Give complete details of your experience, salary expected and when available.

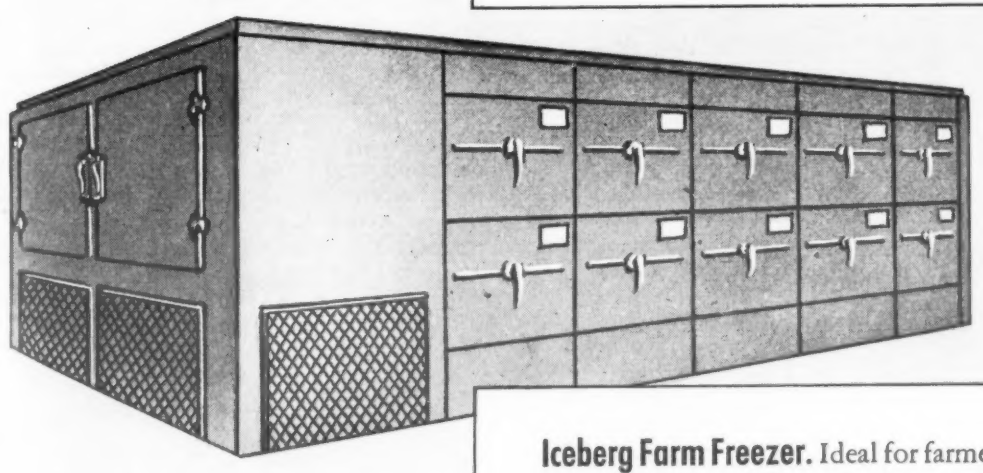
Box 1887, Air Conditioning & Refrigeration News

# A FEW DISTRIBUTORSHIPS STILL AVAILABLE IN KEY TERRITORIES

## for a revolutionary new frozen food storage unit



**Iceberg Commercial Unit.** Ideal for food stores, locker operators, hotels, hospitals, apartment house owners. 60 six-cubic-foot locker drawers for individual renters, with identification card holders for marking names.



**Iceberg Farm Freezer.** Ideal for farmers, rural dwellers and stores. 2 to 10 six-cubic-foot locker drawers with card holders to mark type of food stored and date of storage.

If you've an eye for extra business, then you're our man! For we're offering you the newest, most practical, most *sell*able system for frozen food storage yet devised. It's called the ICEBERG REFRIGERATED LOCKER SYSTEM, and its exclusive patented features give it these advantages over *all other* units.

## 8 Point Superiority

1. **Iceberg** eliminates the danger and inconvenience to patrons of a Zero temperature room.
2. **Iceberg** maintains safe Zero temperature at all times.
3. **Iceberg** has built-in blast freezer for quick freezing.
4. **Iceberg** keeps food conveniently segregated for ready access.
5. **Iceberg** is a portable, sectional, completely self-contained unit.
6. **Iceberg** is a fully insulated unit.
7. **Iceberg** can be quickly and easily installed and put in operation in 24 hours.
8. **Iceberg** carries lowest installation cost . . . lowest operating cost.

But don't just take our word for its sales possibilities. A recent issue of a leading national picture magazine says in a five-page story that frozen food storage is fast becoming one of the most lucrative new industries in the country. Now's your chance to get in on the ground floor! Write today for full details on this plan for extra profits with ICEBERG!

**WRITE FOR FULL DETAILS TODAY!**

In your letter please give us background and history of your business including such information as lines now carried, banking connections, territory you cover, number of years in business, names of officers, etc.

# ICEBERG

## REFRIGERATED LOCKER SYSTEMS, INC.

EMPIRE STATE BUILDING, NEW YORK CITY

## SABECO BRONZE BEARINGS

WILL NOT BURN, POUND OUT, SCORE OR

SEIZE EVEN IF LUBRICATION FAILS

Because its lead content is evenly distributed throughout its composition without the use of impure agents, "SABECO" bronze contains no hard spots to score shafts or disintegrate into an abrasive, destructive compound. Because it assures a minimum of friction even when lubrication fails, "SABECO" bronze makes ideal bearings. Exceptionally durable, decidedly less expensive in the long run, it has rendered unmatched performance in such widely divergent applications as locomotive side rod bearings and refrigerator compressor seals. For complete particulars on how SABECO bronze will eliminate or greatly reduce maintenance and replacement costs in your products or equipment, write to Saginaw Bearing Co., 861 S. Water Street, Saginaw, Michigan.
Cable address "Sabeco"

**sabeco bronze**


# Trend to Forced-Air Units May Standardize Commercial Low Side Coils, Boling Says

## Only 10% of Commercial Low Sides In Use At Present Are Gravity Type Coils

*Editor's Note:* A replacement market totaling 1,000,000 condensing units awaits the commercial refrigeration industry, according to S. R. Hirsch, chief engineer of Brunner Mfg. Co., who, with Cecil Boling, addressed a recent meeting of the Philadelphia section, American Society of Refrigerating Engineers.

A report of Mr. Hirsch's discussion was published in the Jan. 7 issue and this week the NEWS presents Mr. Boling's analysis of postwar trends in low side engineering and application, as well as sales prospects for the commercial field.

**By C. Dale Mericle**

"The replacement field on low sides follows the same general pattern as the field on high sides," said Mr. Boling. "There are plenty of cases where the low side will be replaced without the high sides being replaced, and vice versa. It is also true that, for every condensing unit sold, there are at least the equivalent number of coils sold and, in general, more, to account for multiple jobs.

"The delivery picture on low sides is not as bad as that on high sides; nevertheless, it is true that the biggest bottleneck on low sides is fractional horsepower motors, because of the industry's tendency to forced air units.

"There has been some feeling that there would be a large surplus of low sides thrown on the market by the Armed Forces. This, I believe, is wrong. In fact, it is my thinking that the amount of equipment sold as surplus material will be negligible," he said.

"A considerable amount of low sides built for the Armed Services were, of necessity, made of material which did not stand up; so, today, these are out of use and even the Armed Services need replacements.

"The better low sides were, in many cases, specially constructed and not fully adaptable to civilian work. Beyond this is the fact that a great percentage of the material sold to the Armed Services has been used in foreign bases and will, undoubtedly, remain there," predicted Mr. Boling.

Before the war, the demand on refrigeration low sides was changing gradually from gravity coils to forced air units, he said. Since the Armed Services used almost 100% air units in their applications, and with the trend to unitized systems, the low side demand today is predominantly to air units; in fact, a good guess as to the percentage of air units used to gravity units is 80% to 90%, declared Mr. Boling.

### TREND WILL CONTINUE

"It is our belief that this trend will continue. While there will always be some use of gravity coils for special applications, etc., the percentage of the total number of coils used on gravity work will be negligible.

"In high temperature refrigeration work (above 32°), the industry has had approximately 12 years experience on the use of air units. It is logical that, within this time, considerable improvements have been made to the point where now the low side manufacturers can offer to the industry units they are sure can maintain optimum conditions when properly applied.

"There is no question that, in this field, the forced air unit is readily acceptable and all that is needed is further improvement on the low side to be used. The problem today is not the amount of coil nor the amount of air which a manufacturer puts across his unit, but more the manner in which the air distribution is handled by the unit," said Mr. Boling.

"The ceiling type all-directional air units are an answer to most of the air distribution problems, and the sales of these units will definitely increase at the expense of the standard horizontal air units," he predicted.

"The ceiling unit permits installation in a position in the fixture out of the way, but in such a location as to assure equal distribution throughout the box.

"All units are relatively weak on air distribution, although the ceiling unit is the best developed to date. With the ceiling unit, there is the problem of installing a drain pipe so that it won't interfere with the storage space," he cautioned.

Before the war, the majority of display cases and display fixtures were constructed with gravity coils. Today, all fixture manufacturers are striving to incorporate air units in their display fixtures to assure better conditions in the fixture as a whole, and the desirability of going to unitized systems, Mr. Boling said. In this particular case, the coil man must work closely with the fixture man to get the proper adaptation of the coil and air to the fixture.

### ARMY CHANGED PICTURE

"In the past, low temperature work was done primarily by pipe coils, plates, or brine spray units. Here again, the Armed Services materially changed the picture. They adapted the straight drive dry type air unit to low temperature work with various types of defrosting methods. With this tremendous impetus, the civilian industry is changing rapidly to the use of air units on low temperature work of all types, and, with the low side industry having added automatic defrosting features, the trend will increase even more rapidly.

"It is obvious that, if the above statements are true, the low sides available to the industry in the future will be standard size air units. There will, undoubtedly, be a greater selection of sizes of low sides to take in more variables than on high sides; nevertheless, it is getting to the point where the low side items are strictly stock items.

"This will definitely be the picture except for those cases where the low-side is built and adapted to a particular fixture or refrigerator by the refrigerator manufacturer himself.

### EFFECT ON JOBBER

"This trend means that the jobber, distributor, and dealer in the future will maintain a substantial stock of coils for immediate installations when and if the supply meets the demand. Obviously, this will materially affect the replacement low side field," emphasized Mr. Boling.

"With the low side field definitely going to air units, the adaptation of

*(Concluded on Page 11, Column 1)*

# STOP DEMON HEAT ...THE FOOD THIEF!

Food spoilage caused by inefficient cooling runs into many millions of dollars every year.

Modern Marlo Fin Coils can save your food and money through more efficient heat transfer. Our experienced engineers are at your service.

**MARLO**
**HEAT TRANSFER SURFACE**

Ball-Bonded Blast Coils—Cooling and Heating • Air Conditioning and Refrigeration Apparatus • Industrial Blower Units • Unit Coolers • Evaporative Condensers and Coolers • Low Temperature Apparatus.

MARLO = HEAT TRANSFER

**MARLO COIL COMPANY**
ST. LOUIS 10, MISSOURI

**Pipe and Tube**
**Bending — Welding — Fabrication**

Many foremost manufacturers, having discovered our specialized skill in our particular line, have entrusted us with a great variety of precision pipe and tube work, including bending, coiling, expanding, flattening, brazing and welding.
Swan engineers and technicians, dealing continually with piping, can advise on your bending requirements and offer valuable suggestions on design and economical methods of installation. We invite your inquiries.

**Swan Engineering Company, Inc.**
18-58 Nelson Street
Bloomfield, N. J.

# Proper 'Balancing' of Coil With Capacity Of Condensing Unit Is Stressed by Boling

*(Concluded from preceding page)*

low sides becomes more and more an air conditioning problem," he said. "Since the coil manufacturer must use certain fixed conditions in order to set the standards by which his units are designed, it is necessary that the units be applied, roughly, in accordance with the design principles, in order to obtain the results desired.

"It would seem that a brief review of the important considerations in the adaptation of standardized low sides would be in order.

"As stated, when the coil manufacturer designs the coils, he must begin with some assumed conditions. For example, he knows that, for the general-purpose refrigerator, a 35° to 38° dry bulb, 85% relative humidity are desirable conditions.

### CONDITIONS REQUIRED

"He must then decide what is the proper amount of coil, the proper amount of air, and the proper temperature difference between the refrigerant and the air, in order for this particular coil to maintain those conditions.

"In any refrigerator, you have an infiltration of moisture due to air changes and incoming product loads, and this excess moisture must be taken out by the coil. A check on the psychrometric chart against 35° D.B., 85% relative humidity, will show that the dewpoint is approximately 31.5°.

"Obviously, the leaving air temperature of the coil must be below 31.5°, and the amount it is below this dewpoint is determined by the amount of moisture to be removed, as well as the c.f.m. circulated in the refrigerator.

"For practical purposes, the coil manufacturer has taken a 12° to 15° T.D. between the air temperature entering the coil and the refrigerant temperature in the coil. He also knows from tests and field experience, that the air must be cooled a minimum of 2° to 3° below this dewpoint to handle the excess moisture.

"Having fixed these conditions, he now has the c.f.m. of air across his coil fixed, and merely has the problem of determining the amount of surface to handle a given load with a given amount of air," explained Mr. Boling.

### WHY NOT USE LESS AIR AND GREATER T.D.?

"You might ask why does he not use less air and a greater T.D. However, if the coil manufacturer does this, he immediately penalizes the condensing unit. On the other hand, you might ask why does he not use less air and more coil, which can be done. However, it is strictly a matter of economics which prevents his doing this.

"The above example will point out that it is absolutely necessary, on replacement work or on any refrigeration work, that a capacity balance be maintained between the low side and the high side; in other words, a definite T.D. relationship must be held between the air entering the coil and the refrigerant temperature," he emphasized. "And the coil should be balanced with the condensing unit, not the fixture.

"It is also true that this cannot be a fixed condition, because after all, a coil is asked to work under many variable conditions throughout the various seasons of the year. Therefore, for the general purpose refrigerator, if the coils are balanced at a 12° to 15° T.D., you may expect optimum conditions, on the average.

"On low temperature work, again the coil manufacturer must start out with some conditions on which to design his product; and the usual practice on these units is to design with a 10° T.D. between the entering air and the refrigerant temperature.

"While humidity is definitely a factor on low tetmperature work, the prime reasons for the manufacturer's specifying the lower T.D. on this application are the frost accumulation problem, as well as the fact that pressure drops are far more serious at lower refrigerant temperatures; plus the fact that compressor capacity drops off more rapidly with lower refrigerant temperatures. This means that it is economical to buy more coil and less condensing unit.

"There are going to be certain problems which will come up in the adaptation of standard lowsides to certain special applications," cautioned Mr. Boling.

"Take, for instance, the adaptation of the standard air unit to fur storage work. On this application, it is necessary that a humidity under 60% be maintained. In order for the standard air unit to be applied to such work necessarily means a wide T.D. to obtain the dewpoint required.

"As long as the industry understands the basis upon which standard air units are designed, the units can be properly applied to such applications by the correct method of balancing the low side to the high side.

### DESIGN PRESSURE DROP

"Where standard air units are applied to such work, it must also be borne in mind that the manufacturer designed that unit with a given pressure drop across his coil for the design load; and if excess load is put on it on special applications of wide T.D.'s, the application engineer must make allowance for greater pressure drop across the coil," he explained.

"Any refrigeration lowside is fully dependent upon the correct refrigerant feed. This can be accomplished only by the proper sizing of refrigerant valves. Our experience and tests tend to indicate that the capacity of the refrigerant valve should never be over twice the full load capacity of the low side on which it is used and, obviously, must have as a minimum the same capacity for uniform operation.

### WHEN TO EMPLOY HEAT EXCHANGER

"In standardizing air units, it has become general practice to furnish a heat exchanger with the unit. A heat exchanger, when properly applied, is an asset to the system as a whole. The heat exchanger is good only when it has a negligible amount of suction pressure drop. As far as the low side is concerned, the heat exchanger helps in the elimination of flash gas, and, in general, provides for better operation of the refrigerant valve.

"Beyond the replacement low side field for air units, lies another very important field; namely, liquid cooling low sides," declared Mr. Boling.

"There has been considerable work done in the industry on this type of low side, and we are sure that you will see some developments in this line which are very worthwhile. The liquid cooling market is not appreciated by the refrigeration industry as a whole; however, it is a most important field and can certainly stand more attention.

"The low side manufacturers now have available test and design information they never had before the war. With this additional knowledge, you may expect greater improvements in general low side design," he said.

"There is also an effort being made to establish standard rating methods among the low side manufacturers, so that you would know, when you selected a low side, that you had assurance of capacity for the conditions cataloged.

"With standardization, better design and uniform ratings, the refrigeration industry should have available to them better low side equipment to satisfy the large demand which exists in the replacement field."

## Carrigan & Miles Form National City Firm

NATIONAL CITY, Calif. — Ace Refrigeration Sales & Service is the firm name under which Maurice M. Carrigan and Robert A. Miles have published a certificate that they are conducting business at 619 National Ave. here.

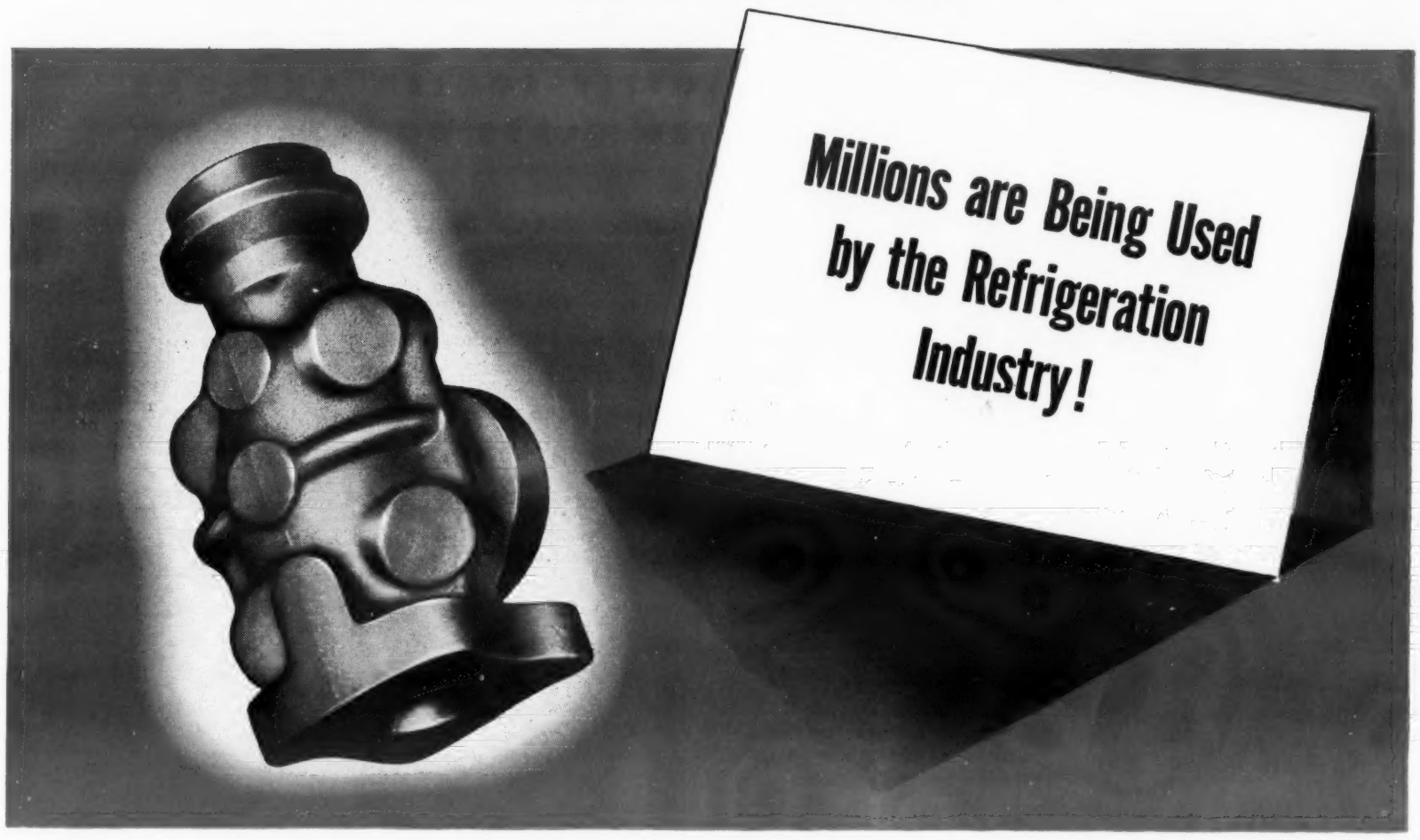

*Certified*

BY A QUARTER CENTURY OF
REFRIGERATION KNOW-HOW

Plan your automatic refrigeration installations for a triple advantage: Proved performance, low first cost, low maintenance cost. LIPMAN machines for dependable service in any field of commercial refrigeration are the result of more than a quarter century of manufacturing know-how. Let LIPMAN serve your needs profitably!

GENERAL REFRIGERATION DIVISION

# The Best Recommendation for Eaton Permanent Mold Gray Iron Castings....

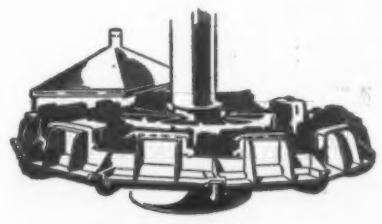



PERMANENT mold gray iron, produced by the patented Eaton process, provides castings with a fine-grained homogeneous structure that insures absolute freedom from porosity.

Because of its desirable physical qualities, its easy machineability, and its economy, Eaton permanent mold gray iron is replacing brass and bronze for the production of many refrigeration parts. Millions of Eaton permanent mold castings have been used for refrigeration service valves!

The Eaton patented permanent mold process easily handles complex cored designs, as well as simple shapes, insuring accuracy and uniformity.

Send for the illustrated booklet "The Eaton Permanent Mold Process."



*The Eaton Permanent Mold Machine is a symbol of the quality of gray iron castings produced by the Permanent Mold Process.*

EATON
MANUFACTURING COMPANY
FOUNDRY DIVISION
9771 FRENCH ROAD • DETROIT 13, MICHIGAN

©1946 Eaton Mfg. Co.

# New Home Freezer Prices

## Seeger-Sunbeam

ST. PAUL, Minn.—A ceiling price schedule for 6, 9, 12, and 18-cu. ft. farm and home freezers manufactured by Seeger-Sunbeam Corp. here was recently announced by OPA in Order 183, MPR 591.

Powered by a ⅓-hp. condensing unit, the 6-cu. ft. model has a retail maximum price of $304. On sales to distributors, the ceiling is $152, and to dealers it is $182. Without the compressor, the prices are $196 to consumers, $98 to distributors, and $118 to dealers.

The order established top prices of $354 to consumers, $177 to distributors, and $212 to dealers for the 9-cu. ft. unit, equipped with a ¼-hp. condensing unit. The ceilings are $226 (consumers), $113 (distributors), and $136 (dealers) if the freezer has no compressor.

Consumer, distributor, and dealer prices for the 12-cu. ft. freezer are, respectively, $402, $201, and $242. Less the compressor, the cabinet is priced at $272, $136, and $164. The condensing unit is of ¼ hp.

Consumers will pay $502, distributors $251, and dealers $301 for the 18-cu. ft. freezer, which is equipped with a ⅓-hp. condensing unit. If the unit is sold without a compressor, the ceilings were set at $352 for consumers, $176 for distributors, and $212 for dealers.

## 4 R. M. Erdin Co. Models

EAST HARTFORD, Conn.—Order 184, recently issued by OPA under MPR 591, authorizes maximum prices for four models of farm freezers manufactured by R. M. Erdin here.

The largest freezer, of 60-cu. ft. capacity, has ceilings of $1,090 to consumers, $545 to distributors, and $654 to dealers. If only the cabinet is sold, the prices are $710 to consumers, $355 to distributors, and $426 to dealers.

A retail ceiling of $770 was established for the smallest unit, a 28-cu. ft. freezer. The price of this model to distributors is $385 and to dealers it is $462.

For the 40-cu. ft. model, consumers will pay $906, distributors $453, and dealers $544. Ceilings on the cabinet alone are $560 to consumers, $280 to distributors, and $336 to dealers.

Maximum prices allowed for sales of the 55-cu. ft. freezer are as follows: $1,060 to consumers, $530 to distributors, and $636 to dealers. Consumer, distributor, and dealer ceilings for the cabinet were fixed, respectively, at $660, $330, and $396.

All condensing units are of ½ hp.

## Wilson Cabinet's Hi-Boy

SMYRNA, Del.—Maximum prices for the Hi-Boy home freezer manufactured by Wilson Cabinet Co. here were recently set by OPA Order 188, MPR 591, at $300 to consumers, $150 to distributors, and $180 to dealers.

## Fowler Equipment Co.

AURORA, Ill.—Fowler Equipment Co. here was recently given OPA's ceiling prices for sales of two models of its Food Banks (low temperature units).

No. 54-6 FB, a 20-cu. ft. model which has a ½-hp. condensing unit, may be merchandised at maximum prices of $650 to consumers, $325 to distributors, and $390 to dealers, according to Order 189, MPR 591.

Retail ceiling on No. 54-5 FB, of 15½ cu. ft. and equipped with a ¼-hp. condensing unit, was set at $540. Price limit on sales to distributors is $270, with a high of $324 on sales to dealers.

## Artkraft Mfg. Corp.

LIMA, Ohio—Retail ceiling prices of $277.50 in Zone 1 and $287.50 in Zone 2 have been set by a recent OPA order for a 6-cu. ft. home food freezer manufactured by Artkraft Mfg. Corp. here.

On sales to distributors, the maximum price is $138.75 in both zones. The ceilings to dealers are $166.50 in Zone 1 and $172.50 in Zone 2.

Prices for the freezer, which has a ⅛-hp. condensing unit, were established by Order 182 under MPR 591.

## Barry Electric Service

BETHEL, Conn. — Authority for Barry Electric Service here to retail its 12-cu. ft. Freezer food storage cabinets at a ceiling price of $466 and its 24-cu. ft. model at $800 was recently granted by OPA in Order 187, MPR 591.

The smaller model, equipped with a ⅓-hp. condensing unit, is priced at $233 to distributors and $280 to dealers. Ceilings on sales to distributors and dealers of the other model, powered by a ½-hp. condensing unit, are $400 and $480, respectively.

## Peaslee-Gaulbert Plans 'Closed Showrooms' To Bar Any 'Direct Sales'

DALLAS, Tex.—No retail sales to consumers will be permitted under the policy established for Peaslee-Gaulbert Corp., appliance distributor here which also maintains outlets in Houston, San Antonio, and Oklahoma City, announces L. B. Merchant, manager of the company's major appliances division.

"In the interest of better merchandising, and in keeping with our desire to best serve our dealers in the postwar period, we shall maintain 'closed' showroms in all of our locations," states the company's announcement.

"We are convinced that the closed showroom policy is essential to good merchandising, and by 'closed' we mean that only retail buyers, department managers, and their assistants will be served in our sample rooms, and, as in the past, we will sell only to dealers purchasing for resale.

"We will not serve any consumer—even though accompanied by retail representatives. We ask the close cooperation of our dealers in maintaining this policy so that it may be done without unnecessary embarrassment."


Now The MOST EFFICIENT, ECONOMICAL and SATISFACTORY Beverage Equipment Available

Zero-Plate
PATENTED
dry CONDITIONED COMBINATION COOLER

DIRECT DRAW KEG, BOTTLE COOLER AND BAR
ICE WATER AND FROSTED GLASS COMPARTMENT

With temperature controlled cold dry air circulated at blizzard speed, the ZERO PLATE Combination Cooler and Bar cools beverages faster than any other cooler. The unique refrigeration system combines an exclusive and patented design of coils, ducts, and their method of application to provide the most economical and efficient cooling unit ever designed. The fast growing demand for ZERO PLATE installations is proof of their satisfactory performance. Dealers report savings up to 50% in operating costs over standard refrigeration units.

The direct draw feature eliminates unsanitary coils, and controlled keg pressure saves the usual morning wasteful "draw off". The well designed storage space for cooling bottled beer, with the coldest bottle always on top, eliminates washed off labels, the drying of wet bottles, ice expense, and the general messiness and contamination always present when ice is used. A special storage shelf can be used for frosting glasses, where this method of service is desired.

Made in 2-keg, 18, 36, 54, and 72-case combinations, finished outside to customer's order, the ZERO PLATE Combination Cooler and Bar represents the finest and most profitable in beer dispensing equipment.

DISTRIBUTORS WANTED
Distributorships for the ZERO PLATE Combination Cooler and Bar are available to qualified dealers. Some choice territories are still open. Write today for details.

Proved
10 YEARS
10 years' proved performance in the heat of the Southwest—ZERO PLATE makes certain even greater efficiency in the more temperate climates.

MANUFACTURED BY
SOUTHERN AIRCRAFT DIVISION
OF PORTABLE PRODUCTS CORPORATION
PLANT IN GARLAND, DALLAS COUNTY, TEXAS

Write for DETAILS on Distributors Franchise

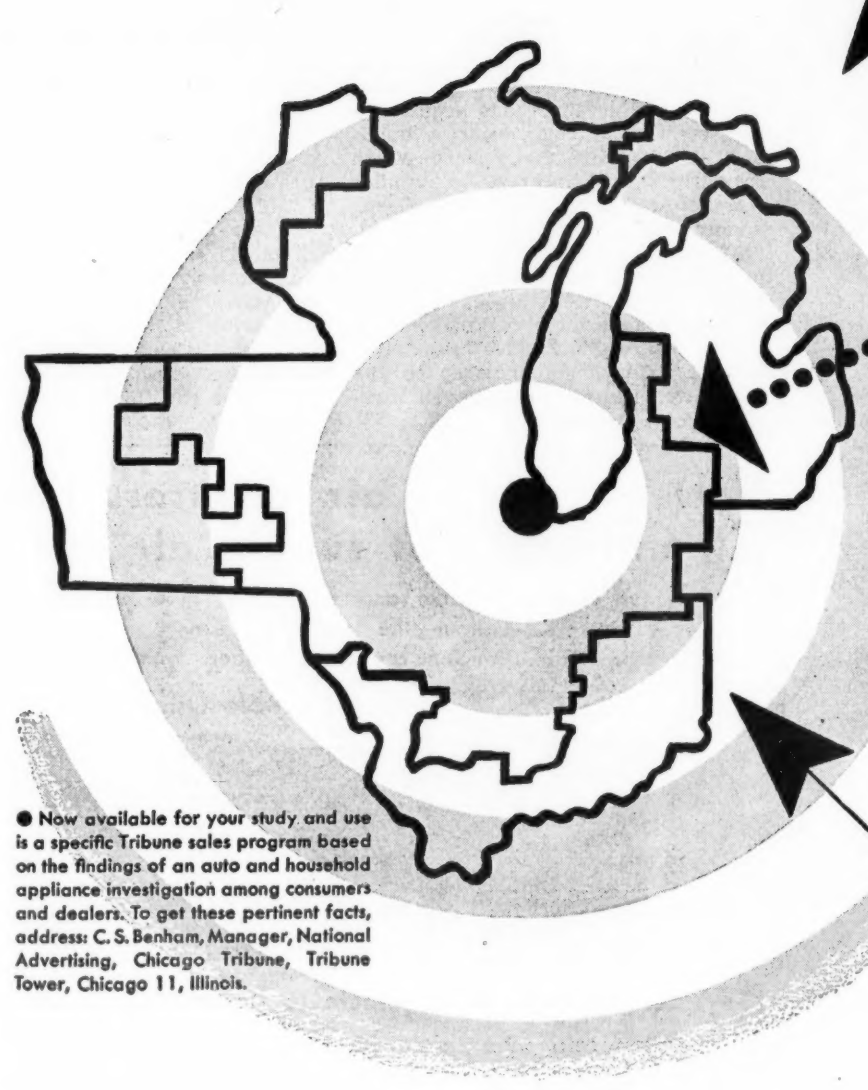
# target for your postwar selling!

## the market

Located at the heart of America, the great Chicago market offers you in one compact, easily accessible area, more business than 13 states combined. No matter whether your production is large or small, here is enough business to absorb all or the major part of your output.

## the medium

Start right now in this $4,496,734,000 market with a single advertising medium—the Chicago Tribune—that is a powerhouse among dealers and consumers. One out of every three families in 756 cities and towns of 1,000 or more population in this area reads the Tribune on week days. On Sundays, it is almost every other family.



● Now available for your study and use is a specific Tribune sales program based on the findings of an auto and household appliance investigation among consumers and dealers. To get these pertinent facts, address: C. S. Benham, Manager, National Advertising, Chicago Tribune, Tribune Tower, Chicago 11, Illinois.

## the demand

Fortified by diversified income and billions in savings, the Chicago market shows a huge pent-up demand for autos, refrigerators, washing machines and "big unit" products generally. Long famous for its tremendous volume purchases, this market has repeatedly broken sales records.

*Only the Tribune gives you a choice of monoroto, coloroto, comicolor, newsprint color, or black and white printing—at milline rates which are among the lowest in the country. Now is the time to get going. For marketing facts and merchandising ideas, call a Tribune representative.*

## your product

You can get started *fast* here. Dealers and consumers are within easy reach of factory and salesmen. Here you can get quick sales and get set for continued dealer and consumer preference after the first easy selling conditions pass and the competition starts to get tough.

**CHICAGO TRIBUNE**
THE WORLD'S GREATEST NEWSPAPER

November average net paid total circulation:
Daily, over 1,015,000; Sunday, over 1,350,000

## Back In the Business

H. J. PREBENSEN

* * *

### Prebensen Again With Air Comfort Corp.

CHICAGO—Lt. Col. H. J. Prebensen has rejoined Air Comfort Corp. of Chicago, manufacturer and distributor of commercial and industrial air conditioning and refrigeration equipment, as executive vice president and director, announces H. E. Wheeler, president.

Col. Prebensen was one of the original organizers of the company in 1935 and served as a director and vice president in charge of engineering until he left to enter government service in February, 1942.

During the war he was assigned to the Chicago Ordnance District where he was successively assistant chief of the tank-automotive branch, chief of the production service branch, and chief of the industrial division. In this latter position which he held from June, 1944, until his release from active duty in December, 1945, he supervised the activities of the district's tank-automotive, ammunition, artillery, small arms, inspection, and production service branches.

In his new capacity as executive vice president of Air Comfort Corp., Col. Prebensen will be in charge of the company's engineering, manufacturing, and contracting operations.

### Curtis Offers Improved Packaged Store Units In 3 and 5 Tons

ST. LOUIS—New and improved models of its 3 and 5-ton packaged air conditioning units have been introduced, announces the Curtis Refrigerating Machine Division of Curtis Mfg. Co. here.

These compact upright units cool, dehumidify, filter, and circulate the air, and can be adapted for heating and humidifying also, the company says. Installation requires only electrical and water connections.

## Inquiries Show Trend To Mechanical Comfort Cooling In California

FRESNO, Calif.—Ninety per cent of professional men who will buy air conditioning for offices and small business establishments writing in for details want "package conditioners," according to Ray Haselbo of Weir Refrigeration Sales & Service here.

"The central California area seems slated for a huge air conditioning market," Mr. Haselbo explained. "Particularly in the San Joaquin Valley where temperatures hit the 100° F. mark regularly every summer.

"Since we announced that we intend to carry a variety of ¾ ton, 1 ton, and larger air conditioners we have had a steady flow of requests for information and prices, particularly in the commercial retailer and professional man's field."

Perhaps wartime experience with air conditioning in government offices, Army centers, etc., has influenced the demand for mechanical air conditioning, Mr. Haselbo pointed out.

"Prior to the war this area was primarily an evaporative-cooler market," he said, "with little or or mechanical conditioning. Now, however, returning doctors, lawyers, buyers, etc., write that efficient room coolers for their offices are first on their buying lists, and many small stores unsatisfied with evaporative cooling are following suit," declared Mr. Haselbo.

## St. Louis Dealer Puts On Aggressive Campaign For Room Cooler Sales

ST. LOUIS—Although only a small percentage of the total room conditioner and appliance stock to be carried is on hand, the Good Housekeeping Shop on Grand Ave. here is taking orders for package room conditioners in an aggressive sales campaign.

The new store, one of the largest in St. Louis, has 6,000 sq. ft. of display space, equipped with fluorescent lighting, elevated platforms for appliance display, and departmentalized sections for each appliance. Room coolers for business offices and professional men will be an important feature, and will be displayed along the front of the store, which has 2,000 sq. ft. of window area mounted only 12 in. above the sidewalk.

Where other dealers started out with appliance copy, the Good Housekeeping Shop ran its first room cooler advertisement in December, and has four salesmen making telephone contacts and personal calls with the idea of canvassing every business office in St. Louis.

Prospects are invited to stop by the store for a look at two lines of coolers carried, and if they desire, a "cooling engineer" will be sent out to make an estimate.

## Enters Refrigeration Field

FRED C. SCHNACKE

**President of Schnacke, Inc., which shortly after the first of the year announced that it had purchased Servel, Inc., the designs, models, and right to manufacture and sell 10 to 50-ton refrigeration and air conditioning compressors, which were formerly manufactured by Servel. The Schnacke firm, like Servel, is located in Evansville, Ind.**

## Bickford Acquires New Buffalo Property

BUFFALO—Preparing for a 500% increase in sales, Bickford of Buffalo, distributor of Carrier air conditioning units and other lines, has acquired a long-term lease on a five-story building at 1209 Broadway here which formerly served as an office supplies warehouse for Curtiss-Wright Corp., announces Louis S. Wolk, president.

The building will be remodeled to provide warehouse, showroom, and office space. There is 60,000 sq. ft. of floor space and a railroad siding.

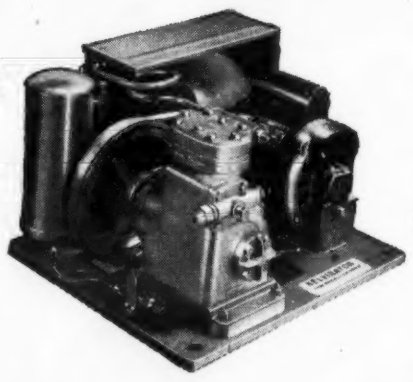
The Bickford firm also is distributor for RCA, Duo-Therm space and hot water heaters, and Howell tubular chrome furniture.

## Air Engineers, Inc., Elects New Officers

BIRMINGHAM, Ala.—Air Engineers, Inc., at the annual meeting reelected Elmer J. Bissell president; George F. Holmes, vice president for engineering and contracts; and added a new officer, E. M. DeRamus vice president for sales.

Mr. DeRamus, who has been with the Air Engineers for four years as manager of dealer sales, has been continuously in the electrical appliance field since his discharge from the Army in 1919. He was formerly assistant sales manager of the Birmingham Electric Co., and later sales counselor for the Matthews Electric Supply Co.


KELVINATOR CONDENSING UNITS



NOW *Competitively Priced* AND *Conveniently Warehoused*



50 DEPOTS CARRY COMPLETE PARTS STOCKS!

Kelvinator's warehousing system is convenient to *everyone!* And these 50 distributor and branch points stock Kelvinator Condensing Units and parts, as well as a full line of refrigeration supplies.

Production of Kelvinator Condensing Units is now confined to a streamlined group of models covering the needs of most commercial condensing unit buyers. With Kelvinator's greatly expanded facilities and new war-born production methods, this has made possible an entirely new sales-minded policy for merchandising Kelvinator Condensing Units... available now—and *competitively priced.*

NASH-KELVINATOR CORPORATION, Detroit

BUY KELVINATOR FOR YOUR COMMERCIAL REFRIGERATION REQUIREMENTS

Kelvinator

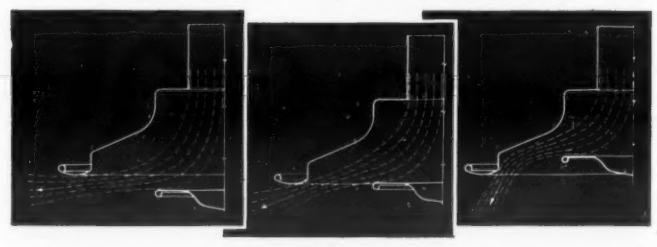
CONDENSING UNITS OPEN AND SEALED



How *adjustable* air diffusers increase the efficiency of supply air diffusion.

Better mixing of room and supply air, more uniform temperatures throughout the occupied zone and noiseless, draftless air diffusion are accomplished with

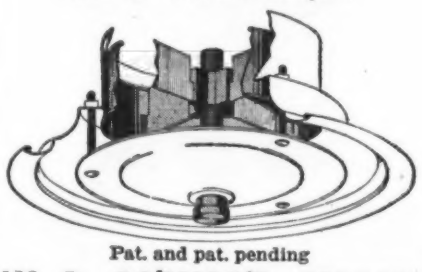
KNO-DRAFT *adjustable* Diffusers



Any desired angle from verticle to horizontal at your fingertip.

By simply turning the air adjustment screws (easily accessible from under the unit) the inner cone of any KNO-DRAFT Diffuser may be raised or lowered to secure any angle of air direction required by ceiling heights, system balancing, and individual or seasonal requirements. Thus the diffuser becomes more effective whether it is used in cooling, heating, ventilating, or combined systems, because it can expel chilled air parallel to the ceiling or eject heated air downward to prevent stratification.

Type K Adjustable Diffuser with D Volume damper.



Pat. and pat. pending

Any desired volume at your fingertip

Every KNO-DRAFT Diffuser can be equipped with a built-in volume damper (easily adjusted by hand-turning knob under diffuser) which varies the outlet aperture uniformly without affecting the outlet velocity or diffusion pattern.

Thus KNO-DRAFT Diffusers can be adjusted quickly and accurately to the angle and volume needed to meet a wide variety of conditions, and as a result, the factors of temperature variation, temperature fluctuation, drafts and noise can be minimized considerably.

The W. B. Connor Engineering Corp. maintains a staff of specialists and district representatives in leading cities to assist you with any air distribution problem.

FREE HANDBOOK

Contains clear sketches, charts, dimension prints and instructive text that simplify the selection and installation of air diffusers.

For your copy write Dept. A-10.

W. B. CONNOR ENGINEERING CORPORATION

AIR RECOVERY AIR PURIFICATION AIR DIFFUSION

112 EAST 32ND STREET W.B. CONNOR NEW YORK 16, N. Y.

# Rema Urges 'Statement on Policy' By Manufacturers To Parts Wholesalers

PITTSBURGH — Individual statements of "sales policies" may be forthcoming from manufacturers of refrigeration parts and supplies, as a result of expressions made to the Refrigeration Equipment Manufacturers Association by representatives of the Refrigeration Equipment Wholesalers Association.

George R. Allen of the Kerotest Mfg. Co., chairman of the Jobbers' Relations Committee of Rema, reports that out of the discussions with the wholesalers of refrigeration parts and supplies, a two-fold program has developed:

R.E.W.A. is preparing a statement of operating policy to show its membership, as well as the manufacturer, what services the jobbers should and could perform. This should serve a dual purpose:

1. It will show wholesalers, in detail, exactly what the manufacturer has a right to expect of a parts wholesaler.

2. It will reveal to manufacturers entering the field for the first time a detailed picture of the operation of the parts wholesaler as one of the existing distribution mechanisms in the industry.

As a corollary to the publication of such a statement by the parts and supply wholesalers, R.E.W.A. is asking that each manufacturer publish a detailed statement of its own sales policy.

Rema's jobber relation committee, backed up by the association's board of directors, has urged its members to review and distribute to their customers such a statement. The committee prepared the following outline of what such a statement should cover.

**A. Statement of Sales Policy**

I. Sales to Jobbers or Distributors (for resale).

a. Sell only through Jobbers or not?

b. Have exclusive or non-exclusive jobber policy?

c. How do you determine when to offer jobbers' prices to a new account?

1. Definition of Jobber

d. Under what conditions are sales made to trade?

e. How are orders and inquiries from trade handled with reference to jobber?

f. Are policies national in scope or do they vary sectionally?

II. Sales for original equipment.

a. Types of manufacturers and definitions covering same.

b. Participation of Jobbers and Distributors.

III. Sales Representation.

a. Commission men or salaried employes.

b. Limitations of authority of field men.

c. Authority of field men to accept new accounts.

IV. Factory Warehouses.

a. Where maintained and how operated.

V. General operating policies.

a. Terms of sale.

b. Credit policies.

c. Returned material.

**B. Advertising and Promotional Policy**

I. Media used to build demand.

II. Jobbers mentioned.

III. Promotional Material.

a. Types available.

b. Direct mail.

c. Catalogs and engineering material.

**C. What the Manufacturer Expects of the Jobber**

I. Education of jobber salesmen.

II. Promotional work by jobber.

a. By jobber man.

b. By jobber man with factory man.

III. Use of promotional materials.

IV. Product display.

V. Merchandise stocks to be maintained.

VI. Competing lines.

VII. Use of manufacturers' part numbers in ordering.

Other requests made on the manufacturers by the parts and supplies wholesalers, Mr. Allen reported, were for uniform paying dates and uniform cash discounts, and continued improvement of product packaging.

Rema has requested of the R.E.W.A. statistics covering sales by states, sales by products, and typical operating margins, such information being very valuable to the manufacturers in terms of evaluating their own sales performance.

Rema has also asked the Manufacfacturers Relations Committee of R.E.W.A. to work with Rema's committee in laying out a typical sales, merchandising, and promotional program for a parts wholesaler's operation.

## Boettiger Heads Industrial Sales For Drayer-Hanson

CINCINNATI — Appointment of W. O. Boettiger as industrial sales manager for Drayer-Hanson, western manufacturer of heat exchange equipment, has been announced by J. G. Lombardi, director of sales.

Mr. Boettiger has been active in engineering and water works fields in California for many years. In 1936 he became associated with the Columbia Steel Co During the past three years he was in charge of the wartime subcontracting program at Consolidated-Vultee Aircraft.

In the capacity of industrial sales manager, Mr. Boettiger will have under his supervision, sales of Drayer-Hanson heat transfer products for general industrial use.

### New Los Angeles Firm

LOS ANGELES — Industrial Air Conditioning Equipment Co. is the firm name under which George and Dorothy Hatch have announced that they are conducting business at 3527 Carnation St. here.

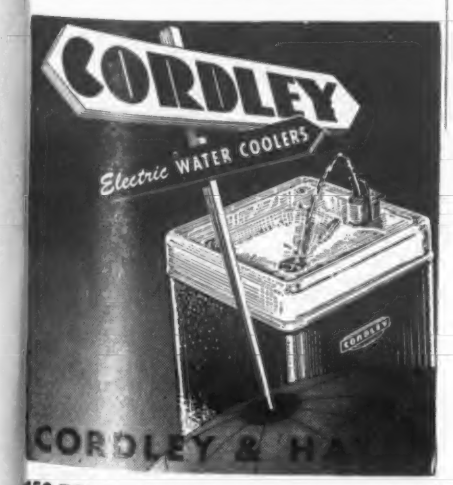

Thank You!

FROM

AIRO sincerely appreciates the loyal patronage and friendly cooperation given us by our customers and suppliers, alike, through the turbulent war years.

*Now, at the beginning of a peaceful and productive era, we wish our many friends in the trade a most prosperous new year.*

AIRO SUPPLY CO. (NOT INC.)
WHOLESALE ONLY
2732 N. Ashland Ave., Dept. B
Chicago 14, Illinois




452 FOURTH AVE., NEW YORK, N. Y.
Specialists on drinking water equipment for 50 years

"RECOLD"
WATER DEFROST
"RECOLD" WATER-DEFROST
U.S. PAT. 2,219,393
REFRIGERATION ENGINEERING Inc.
LOS ANGELES • CALIFORNIA

NEW FROM COVER TO COVER

and filled with the latest developments in AIR CONDITIONING and REFRIGERATION

VALVES
FITTINGS
ACCESSORIES

Write for your Copy today!

KEROTEST MANUFACTURING CO.
PITTSBURGH 22, PENNA.
Branch Offices
NEW YORK · CHICAGO · HOUSTON · LOS ANGELES

## They'll Do It Every Time . . . . By Jimmy Hatlo

HMMPH! THAT ALL THE CALLS YOU MADE TODAY? WHERE WERE YOU? THE BALL GAME OR DATING A BLONDE? THIS IS A BUSINESS INSTITUTION, NOT A RELIEF HOME, Y'KNOW!
SAY! WHO'S SUPPOSED TO BE RUNNING THIS JOINT, ANYHOW- THAT CORRESPONDENCE SCHOOL STENO OR OLD TIGER-PUSS HARRY?
IF YOU ASK ME, SHE'S NOT ONLY RUNNING THE JOINT- SHE'S GOT THE INDIAN SIGN ON OLD HARRY, TOO...
ATTENTION, JERKS! ATTENTION! THE QUEEN! SHE GIVES FORTH TO ROYAL UTTERANCES!
THREE MONTHS AGO SHE CAME IN BEGGIN' FOR A JOB. NOW YOU'D THINK SHE OWNED THE PLACE...
SALES MANAGER
DAILY SALES REPORT
10-19
MAYBE IT'S BECAUSE SHE'S GOT NO HUBBY TO BOSS AROUND... BUT SHE SURE RUNS THE POOR GUYS AT THE SHOP... THANX TO "OFFICE FORCE" CLEVELAND, OHIO.
COPR. 1945, KING FEATURES SYNDICATE, Inc. WORLD RIGHTS RESERVED

☆ *Buy VICTORY Bonds* ☆


# "REPUTATION"

**A Texas Dealer Goes For Economical and Dependable Service**

"After very carefully choosing a line of appliances that would give economical and dependable service, we looked for the same attributes in a financial institution with which to do our business. It was easy to see from the record why Commercial Credit Company would meet our requirements.

"It is gratifying that the new Commercial Credit set-up will offer more to our firm, as well as to our customers, than the other financial firms have been willing to provide. It is another source of satisfaction to do business with an institution which over a period of years has had an irreproachable REPUTATION for integrity and fair dealings."

R. E. Lewis Secretary-Treasurer

SOUTHWESTERN APPLIANCE COMPANY
Amarillo, Texas

COMMERCIAL CREDIT PLAN

**COMMERCIAL CREDIT COMPANY**
BALTIMORE 2, MARYLAND
Capital and Surplus more than $80,000,000



Trade Mark registered U. S. Patent Office; Est. 1926

AN INTERNATIONAL INSTITUTION • SUBSCRIBERS ALL OVER THE WORLD

AIR CONDITIONING AND REFRIGERATION News

Copyright, 1946, Business News Publishing Co.

F. M. COCKRELL, *Founder*

Published Every Monday by BUSINESS NEWS PUBLISHING CO.
450 W. Fort St., Detroit 26, Mich. Telephone Randolph 0924.

Subscription Rates: U. S. and Possessions, Canada, and all countries in the Pan-American Postal Union: $4.00 per year; 2 years for $7.00. All other foreign countries: $6.00 per year. Single copy price, 20 cents. Ten or more copies, 15 cents each; 50 or more copies, 10 cents each. Send remittance with order.

GEORGE F. TAUBENECK
*Editor and Publisher*

PHIL B. REDEKER, *Editorial Director*

C. DALE MERICLE, *Associate Editor*
ROSS H. POTTER, *Associate Editor*
JOHN SWEET, *Assistant Editor*
*Editorial Assistants:* BARBARA LEE, MARCELLA PRICE, FRANCES WEED, AND LORRAINE MCNINCH.

ELIZABETH SMITH, *Assistant Bus. Mgr.*
MACIL STEPHENS, *Asst. Adv. Mgr.*
ROBERT M. PRICE, *Adv. Representative*
ED HENDERSON, *Circulation Mgr.*
RUTH RICHARDSON, *Subscription Mgr.*
WALTER J. SCHULER, *Production Mgr.*

*On leave of absence to serve our country:*
*U. S. Army:* GEORGE L. COLLINS, GEORGE M. HANNING, AND HUGH T. MAHAR. *U. S. Army Air Forces:* GEORGE WATKINS AND WILLIAM WALTER. *U. S. Coast Guard:* MERTON GLUTTING. *Waves:* MARGARET MARR AND LYNDON BRODE.

Member, Audit Bureau of Circulations. Member, Associated Business Papers.

VOLUME 47, NO. 2, SERIAL NO. 878, JANUARY 14, 1946


# Personal Service Will Return

WORLD WAR II provided two contrasts:

The restaurant proprietor who announced:

"Please be lenient with our waiters. If they insult you, forget it. Customers I can get. Waiters I can't."

And the other: The corner grocer who provided you—his old and treasured customer—with a pound of butter, two lamb chops, or a package of cigarettes.

Which merchant will you patronize in the future? The restaurateur who succumbed to the "public-be-damned" attitude, or the corner grocer who did his best to supply your needs, as best he could under the law?

In normal times, the American public is the most catered to, coddled, and favor-curried public in all the world. These times are returning again—and fast!

So, young man, if you want to carve out for yourself a distinguished place in this brave new world, be prepared to offer extraordinary service as a retailer.

It will be appreciated!

Be ready to pick up and deliver, to offer easy credit terms, to provide parking facilities, to service the equipment you sell, and to give "service with a smile."

To be sure, extra services are quite expensive.

But before abandoning this idea, please consult returning G. I.'s.

Special services are one of the things *they were fighting for* in the Pacific and the E.T.O. Special services are one of those items of American life which distinguish the U.S.A. from all other nations. The boys want to come home to that kind of living.

## PARKING IS A BIG PROBLEM FOR SHOPPERS

This has become the Motor Age.

Families now shop together, in the evening, instead of depending altogether upon the harried wife-and-mother's daytime buying opportunities. Particularly is this true when they shop for appliances.

They read the newspaper advertisements. And they shop accordingly—calculating the expenditure of gasoline against the savings advertised by a certain store.

Normally, an average family's accumulated needs require a journey toward a large, centralized shopping district, where many types of goods can be bought.

But if ample parking lots aren't available for these driving-for-bargains shoppers, your advertising campaign eventually will be wasted.

If you are ambitious to do a tremendously increased business, be sure that neighboring automobile parking facilities are adequate.

If they aren't, buy a nearby lot! It will pay!

This is the era of motorist-shoppers.

And you will have to spend big money to protect your original investment in a location for your store, if you don't follow along with this by-now obvious trend.

## Additional Classes Seen Likely as 2 Colleges Report Heavy Enrollment in Locker Plant Course

OMAHA, Neb.—Due to the number of applications for the two college courses dealing with the field of locker plant operation sponsored by the National Frozen Food Locker Association, R. R. Farquhar, executive director, has announced that preference will be given to veterans if applications exceed capacity of the classes.

"Present indications are that it may be necessary to establish additional schools in order to accommodate the demand," he declared.

Addition of three subjects—plant management, public relations, and bacteriology—to the 12-week locker plant courses which will be given at Kansas State college in Manhatten, Kan., beginning Feb. 11, and at Ohio State university in Columbus, beginning March 26 was also announced by Mr. Farquhar.

Other subjects covered by the schools include; history of the art and science of food preservation; the processing of meats, poultry, fish, vegetables, and fruit; slaughtering; smoking; curing; additional services by which locker plants may increase their revenue; trade association activities and accomplishments; letter writing and advertising; bookkeeping methods; preparation of frozen foods for table use; the principles of refrigeration; and the construction, design, and equipment of modern frozen food locker plants.

"Briefly the course will cover the entire field of locker plant operation," Mr. Farquhar said, "and while it is realized that only practical experience can bring the greatest proficiency, graduates of the school will be well qualified to act as plant employes, managers, or owners of their own businesses."

Cost of the course at Ohio State will be $60, while at Kansas State applicants will pay $65. Veterans' tuition will be paid by the government under the GI Bill of Rights, and they will also receive the customary subsistence expenses.

Applications for the Kansas school should be made to Prof. George A. Filinger, Kansas State College of Agriculture, Manhattan, Kan.; and applications for the Ohio course to Prof. H. D. Brown, Horticulture Department, Ohio State university, Columbus, Ohio.

## England Eyes Frozen Food Dinner Dispenser Developed by Buffalo Industrial Caterer

BUFFALO—William Cease, head of Cease Commissary Service of Dunkirk, N. Y., soon will fly to London in conjunction with the sale of his "magic" frozen dinner box to a British industralist.

The dinner dispenser, invented and patented by Mr. Cease, is a rectangular box, thermostatically controlled, with a capacity of 75 frozen plate dinners. These are delivered in containers and placed in the dispenser, which through automatic control heats the food to a desired temperature by a given time. The dinners pop out of the box as a crank is turned.

"This deal all goes back quite a ways," said Mr. Cease. "Nutrition is a serious matter in England and because of this, under government approval, the National Society of Caterers to Industry sent a commission over here to study our in-plant feeding and various methods of food handling.

"They went through a lot of big food plants and finally visited our place in Dunkirk. They were much impressed with the dinner dispenser, because it is especially designed for small industrial plants and schools without cafeterias. Since most of their industries are small, it would suit their requirements very well," he explained.

Mr. Cease said months went by and he heard nothing from the commission, and then one day he had a letter from a British industralist, J. Roy Paton, to whom the machine has been recommended by the commission.

Following negotiations, Mr. Cease sent one of the machines to Mr. Paton. It passed his engineer's test and arrangements were made by the British Foreign Office for Mr. Cease to make the trip to that country to demonstrate what he calls his "gadget."

"Since the new Labor government has come into power," said Mr. Cease, "all plants in England that hire more than 150 employes are required to serve a hot meal. There's another law which requires feeding school children hot meals."

The frozen meals served from the dinner dispenser are cooked before freezing and require only heating. They are arranged on square aluminum plates.

Furnishing foods for the industrial plants of Buffalo is still Mr. Cease's main line, but he is planning to branch out into frozen foods.

## N. Y. Frozen Food Corp. To Have New Building

ROCHESTER, N. Y.—New York Frozen Foods Corp. officials announced that ground has been broken in Brockport for a new plant. The structure, scheduled for completion by June 1, will be one-story, except at the north end where a second story about 35 by 105 ft. will house the general offices.

## More Wyoming Families Froze Foods In 1945

LARAMIE, Wyo.—Meat, fruit, and vegetables totaling 516,023 pounds were frozen by Wyoming families represented at the 1945 home-makers' meetings conducted by Evangeline J. Smith, agricultural extension nutritionist at the University of Wyoming, according to her annual report.

The number of families utilizing freezing for preservation of foodstuffs during the year showed a material increase over the preceding year, it was reported, particularly where fruits and vegetables were concerned.

The university nutritionist stressed such preservation as a means of making it possible for winter meals to be more appetizing and nutritious. Approximately 820 Wyoming girls are enrolled in 4-H clubs and are learning to apply scientific information on food and nutrition, and teach others in their communities, Mrs. Smith said.

## Locker Plant Construction

### Long Beach, Calif.

LONG BEACH, Calif.—A new frame and stucco frozen food locker building, 70 x 95 ft. in size, will be erected on Atlantic Ave. near here, for Francis Fisher.

### Los Angeles

LOS ANGELES—A new corporation here is Economy Frozen Food Locker Stores, with a capital of $100,000. Directors are Cecil L. Hollerman, George R. Sehi, and Bernard J. Del Valle.

### McDonough, Ga.

McDONOUGH, Ga. — Henry County's new frozen food plant, which recently opened here, is one of the latest additions to Georgia's growing list of locker plants.

### Buffalo

BUFFALO—Frozen Fresh Corp. has been incorporated here with a capital of $55,000. Incorporators are Rex H. Beck, Samuel D. Magavern, and Harold C. Lowe.

### Pasadena, Calif.

PASADENA, Calif.—An addition to the sharp freeze room of the Crown City Ice Co. at 57 Vista Ave., here, is being erected at a cost of $1,000.

## 540-Locker Plant Opens In Cheyenne, Wyo.

CHEYENNE, Wyo. — The Jack Frost Locker Co., 4015 Warren, this city, opened a new addition Jan. 1 with 540 additional new lockers. The company also is constructing a modernistic strictly frozen food store which will be opened for business Feb. 15. Locker patrons will be enabled to buy their meat and frozen foods at wholesale prices at that time.

## Form Frozen Foods Firm

LOS ANGELES—Sonora Frozen Foods, Inc. has been formed here with 1,000 shares of no par value capital stock. Directors are: Homer E. Jones, of Beverly Hills, Calif.; Cliff C. Nolder, of Corona Del Mar, Calif.; and E. Llewellyn Overholt, of Los Angeles. The new corporation is represented by E. Llewellyn Overholt, 820 Rowan Bldg. here.

### Prince Rupert, B. C.

PRINCE RUPERT, B. C., Canada—Two sharp freezers have been put in operation by the Prince Rupert Fishermen's Co-operative Association here.

### Norwalk, Calif.

NORWALK, Calif.—A new frozen food locker plant is being erected at 248 East Firestone Blvd., Norwalk, Calif., by L. H. Bohn, of 1421 Paddison Ave., that city. It will provide 2,800 sq. ft. of floor space and will cost $14,000.

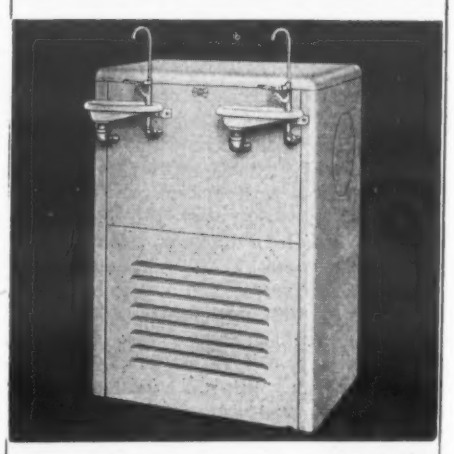

**We Manufacture Only Food Conservators**

Our entire time is devoted to the manufacture, research and development of them. Write for particulars.

**Master Manufacturing Corp.**
121 Main St. Sioux City 4, Iowa

800,000 MASTER FOOD CONSERVATORS IN USE

**WATER COOLERS WITHOUT PRIORITY**

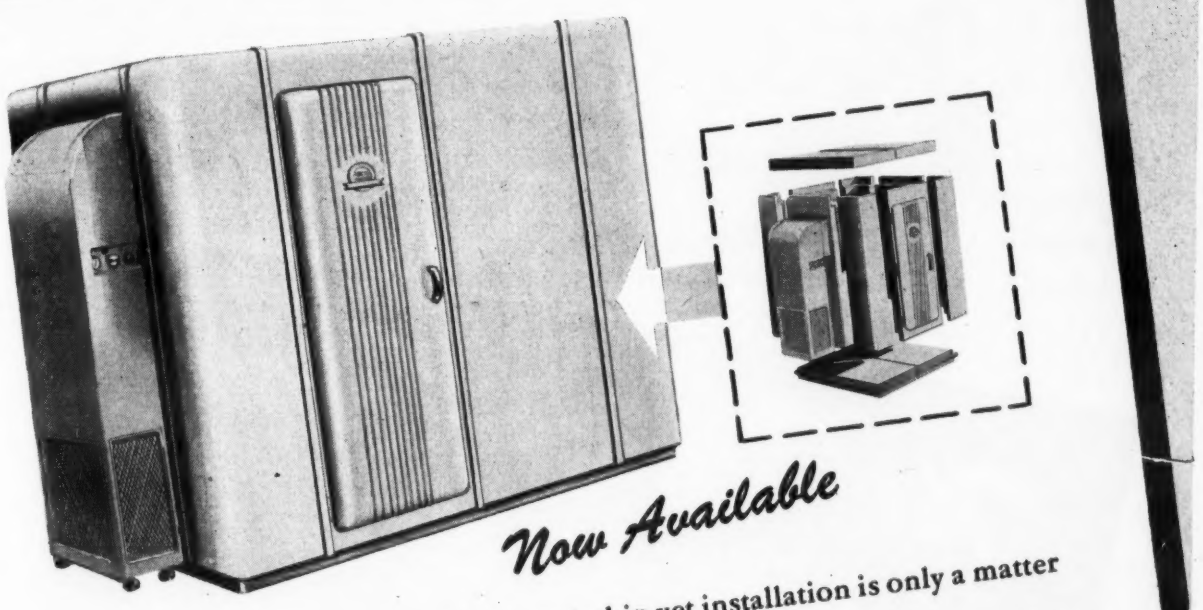


Glass filler coolers for cafeterias; bubbler coolers for offices, stores, factories; and commercial coolers for all applications . . . available without priority. Complete range of models and sizes.

DAY AND NIGHT — WRITE FOR LATEST DATA
COOLER DIVISION
DAY & NIGHT MFG. CO.
MONROVIA • CALIFORNIA
FACTORY REPRESENTATIVES
NEW YORK — A. C. Homeyer, 682 Bdwy. • CHICAGO — Marc Shantz, 565 Wash. Blvd.
ST. LOUIS — R. H. Spangler, 3331 Market St. • DECATUR, GA. — J. E. Parker, 228 2nd St.

REFRIGERATION CORPORATION FRIGID FREEZE FOOD LOCKER of AMERICA

**Only FRIGID-FREEZE**
Expandable—Prefabricated WALK-IN FREEZER has all these Revolutionary Exclusive Features



Now Available

Beautifully designed and built like a battleship yet installation is only a matter of hours. Completely prefabricated with precision-fitting sections. Just follow the instructions and throw the switch. Zero is constant and dependable . . . shelves are large and ample enough to accommodate great stocks of frozen foods. Build up according to your needs . . . from 150 to 750 cubic ft.

**High Spots**

- ZERO SENTINEL—An ingenious, fool-proof alarm (exclusively Frigid Freeze) that warns when dangerous temperatures are about to be reached. Prevents food spoilage.
- THERMO-INDICATOR—Visibly registers temperatures for frozen foods.
- AUTOMATIC DEFROSTER — Really automatic self-defrosting system for temperatures below the frost line. This is a Frigid Freeze First—prevents frost accumulation. Eliminates scraping, watching and bother.
- FREEZTROL—A low-temperature modulator that permits exact temperature adjustment and controls air circulation inside the cabinet.
- SELF-CONTAINED FREEZER UNIT—Ready to connect to the nearest electrical outlet. No refrigeration installation required.
- COMPLETELY PREFABRICATED—EXPANDABLE—With exclusive patented device for easy assembly and erecting.

REFRIGERATION CORPORATION FRIGID FREEZE PRODUCTS of AMERICA

Designers and manufacturers of a complete line of commercial Frozen Food Cabinets
CLOSED TOP • GLASS TOP • OPEN TOP DISPLAY
ZEROMAT, SELF SERVICE-AUTOMATIC • REACH-IN

PIONEERS IN LOW TEMPERATURE • DESIGNING • ENGINEERING • MANUFACTURING • CONSTRUCTION

REFRIGERATION CORPORATION of AMERICA

241-245 West 64th Street, New York 23, N. Y. • Cable Address: "REFCAM"
Sales Office and Showroom: 225 West 57th Street, N. Y. C. (19)

## *Independent Distributors to Handle Sales of Westinghouse Sterilamps*

BLOOMFIELD, N. J.—Setting up of a nationwide organization of independent distributors to serve as application engineers and as sales and service outlets for the Sterilamp, a bacteria-killing device, has been announced by the Westinghouse Lamp Division, Bloomfield, N. J.

Charles W. Flood, Jr., manager of the Sterilamp department, said that Westinghouse determined upon this unique plan of distribution "because bactericidal ultra-violet has opened up a new industry requiring specialists in ultraviolet engineering." Mr. Flood added:

"To obtain proper benefits in air disinfection, for example, more than a lamp and a fixture are required—the right lamps must be placed properly under the right conditions. Already Sterilamps have saved thousands of dollars in the protection of perishable products and they soon will become standard equipment in such industries.

"More important, however, is the role bactericidal ultraviolet will play in the public health field. We visualize that in the future air disinfection may prove to be as important as water supply purification."

In most cases, Mr. Flood said, the firms appointed as distributors are handling only Westinghouse bactericidal ultraviolet lamps.

## E. H. Schaefer Co. Names 3 to Sales Posts

MILWAUKEE—L. E. Peterson and Herman G. Bauer have been appointed sales counselors, and Wayne B. Colvin promoted to manager of the advertising and sales promotion department of the E. H. Schaefer Co., distributor of General Electric appliances here, announces Edw. C. Zabors, general manager.

Mr. Peterson has spent 15 years in this type of work, while Mr. Bauer was sales supervisor at the Milwaukee Gas Light Co. for seven years previous to the war.

Mr. Colvin had been associated with the Schaefer company for five years in various capacities before his promotion.

## *Servel Chiefs Load Up Their 'First'*

**Servel, Inc., admits this is just a "gag" shot, but it does serve to announce that the company's first mass-produced "Supermetic" condensing unit has come off the production lines. (Left to right) Vice Presidents Harry Newcomb and W. E. Baker load the unit on a truck to be hauled away by W. J. Aulsebrook, sales manager of the electric division. Supervising (on the right) is Geo. S. Jones, Jr., vice president in charge of sales.**


ADD THIS TO YOUR NOTES ON LOW-TEMP. EQUIPMENT . . . .

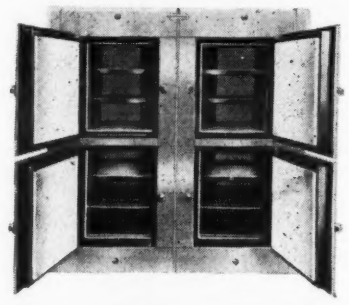
**Wilson ZEROSAFE** *For the Retail Storing and Dispensing of Frozen Foods*

DEFINITELY NOT EXPERIMENTAL . . .

**Wilson ZEROSAFE Reach-Ins for the Storing and Dispensing of Frozen Foods were designed with the same engineering know-how that has distinguished the Wilson ZEROSAFE Reach-In Farm Freezer . . . Wilson has solved Freezing and Storing problems since 1939.**

BIG IN CAPACITY . . . SPACE-SAVING . . . EASY-TO-USE . . .
"EXPANDABLE" . . . FIRE-SAFE . . . MODERN

**Models in sizes and multiples of sizes to meet every conceivable need.**



Wilson ZEROSAFE Reach-In Sectional Model RL-60 for the Storing and Dispensing of Frozen Foods.

**WILSON REFRIGERATION, INC.** Division Wilson Cabinet Co., SMYRNA, DELAWARE

**ENGINEERING** *Know-How*

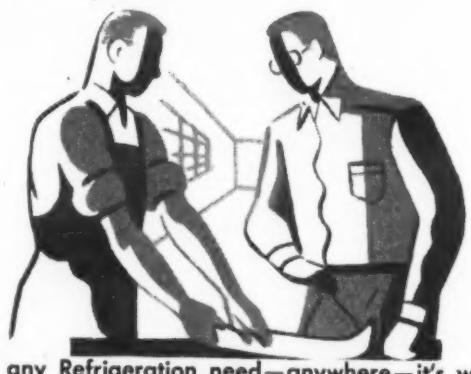
—backed by over 39 years of sound experience; during which time some of the most involved and unusual Refrigeration problems have been successfully solved.

*The Know-How behind the Name*

**HUSSMANN**

**MANUFACTURING** *Know-How*

—in a huge plant where all facilities are concentrated toward a single goal—the better handling and production of Refrigeration Equipment for every conceivable need.



**SERVICING** *Know-How*

—with a nation-wide Service Organization of trained, competent men who thoroughly understand installation and maintenance.

For any Refrigeration need—anywhere—it's wise to consult first with HUSSMANN.

**HUSSMANN**
REFRIGERATION, INC.
HUSSMANN BUILDING • ST. LOUIS 6, MO.


**Here's One Way:**

## Combination Freezer, Walk-In, Reach-In Solves Problems for Roadside Restaurant

FOWLER, Calif.—All of the multiple refrigeration problems of the 99 Cafe here were solved at once by a novel three-way installation made by Weir Refrigeration Service of Fresno, Calif.

This highway restaurant, catering to thousands of motorists on the state's main north-south thoroughfare, had been plagued by spoilage of large amounts of food which had to be kept on hand due to vastly increased traffic after V-J Day. Ed Avazian, owner, had only an obsolete beverage cooler, lid-top meat cooler, and an ice cabinet as refrigeration facilities, all taking up far too much room and inefficient from every standpoint.

That was the situation when Ray Halsebo of Weir Refrigeration Service was called in. Studying the restaurant, Mr. Halsebo found that some type of central refrigeration easily available to counter employes, waitresses, and the cooks in the kitchen was needed, preferably so arranged that refrigerated foods could be obtained at all positions with a minimum number of steps.

### NOVEL COMBINATION

The result is a novel combination of a freezer box, walk-in refrigerator, and reach-in box which was built at a point behind the lunch counter, separating this and the table service area from the large kitchen behind.

All are included in one unit, beginning with the walk-in box. This measures 8 x 10 ft., 8 ft. high inside, of redwood with 4 in. of fiberglas insulation on all surfaces. The exterior is white enameled Masonite, as are the interior walls. It is located between the kitchen and dining room immediately behind the quick-service lunch counter for truck drivers and hurried motorists.

The front wall faces the counter and dining room. Inset in this wall are two reach-in doors of heavy plate glass with rubber gasket stripping for a tight seal. Behind them four levels of shelving, light metal rod types on iron brackets, are used for milk, butter, cheese, and other dairy products, as well as salads, dipped ice cream, and other lunch counter necessities. Waitresses thus can reach most of their needs quickly.

In the back wall of the walk-in box, facing into the kitchen, are four more doors, these solid wood with Masonite facings. They open on to a similar series of shelving, except for one large bay in which large cuts of meats, even quarters, may be conveniently hung.

The shelving contains steaks, chops, fry meats, poultry, and French fried potatoes handy to range and broiler immediately behind. Cooks need only walk 5 ft. to reach any item, a great timesaver inasmuch as they formerly had to go to the basement or outside the kitchen for meats.

The four doors are equipped with detachable spring loaded stays which allow them to be left open or closed as wished, to meet peak-load periods.

The freezer unit is built inside the box for ice cream, meats, sea food, frozen foods, and other items. It is an 18-cu. ft. box with two compartments reached by flat, tight fitting lids hinged at the back and likewise provided with spring loaded stay rods. Built against the left wall of the walk-in box, opposite the main door, the freezer uses one wall of the walk-in as its own rear wall as an economy feature.

### COLD PLATES USED

Refrigeration here is applied by cold plates at top and bottom, which maintain an even temperature of from zero to -10° as required. The freezer has allowed the 99 Cafe to feature sea foods on regular week days, rather than only on Fridays as was formerly the situation.

The walk-in box itself is kept at an even 38° F. by a blower-and-coil unit circulating 15,000 c.f.m. Both this unit and the freezer plates are powered by a single 1-hp. heavy duty compressor with thermostatic control, located outside the box.

Mr. Haselbo designed an intricate and delicate system of expansion valves to safeguard these temperatures, including a standby valve control which will take over if the original two fail. The unusual installation is attracting many more highway cafe owners, according to Weir Refrigeration Service.


. . . . MODERN EFFICIENT ECONOMICAL REFRIGERATION

DOLE Vacuum COLD PLATES
Maximum Refrigeration Efficiency
for all REFRIGERATION PURPOSES

**DOLE** *Largest Manufacturers of Plate Type Evaporators*

REFRIGERATING COMPANY
5910 North Pulaski Road, Chicago 30, Illinois
New York Branch 103 Park Avenue, New York 17, N. Y.

# Private Banks Best Source of Credit for Small Business, Says Dept. of Commerce

WASHINGTON, D. C.—How small businesses may obtain credit and capital for sound business ventures is explained in a bulletin on "Credit Sources for Small Business," just issued by the U. S. Department of Commerce.

The private commercial bank is still the main source of business credit, the bulletin says, and small businesses have even more reason to turn to their banker for credit help than have large companies which have increasingly relied on internal financing and on the issuing of securities to meet their capital and credit needs.

The bulletin discusses in detail the types of credit extended by such diverse institutions as banks, industrial banking companies, small loan companies, factors, sales finance companies, miscellaneous finance companies, insurance companies, equipment manufacturers, wholesalers, and similar suppliers, individual investors, investment bankers, corporations seeking affiliates, branches, or outlets, the Reconstruction Finance Corp., Federal Reserve Banks, Smaller War Plants Corp., Federal Housing Administration and community industrial development groups.

Many banks are now setting up special small business departments, according to the bulletin which states that in the choice of a bank the small business man should "choose a banker who possesses character and leadership, one who is willing to assume a risk providing there is a reasonable chance of repayment; a progressive banker, one who is alert to current industrial trends, willing to make loans for new products and more efficient processes."

The community banker, who more often than not is a small business man himself, may be more receptive to the needs of the small business man than the larger city bank, the bulletin says, but sometimes the larger banks quote more favorable rates and the only answer is to compare.

Once the small business man has chosen a banker he should consult him frequently, visiting him at his office and inviting him to return the visit, the bulletin advises, and adds:

"Show him around. Invite him to look over your books. Freely explain your plans to him, especially if they involve expenditures out of the ordinary. Do not try to conceal difficulties from him. It is part of the banker's code not to betray confidences. Mutual frankness is the first basis of good banking relations."

Business men who can qualify should be able to turn to their bank for one of the following types of loans, according to the bulletin: character loans, term loans, instalment loans, loans on accounts receivable, loans secured by warehouse and field warehouse stocks and equipment loans.

The difficulty small businesses often encounter in securing adequate credit is also discussed, and the bulletin notes that "small concerns have often had to resort to the unsound practice of using renewable short-term commercial loans for working capital, for long-term seasonal capital, or even to take the place of fixed long-term capital."

In general, the bulletin says, the business man is justified in seeking a loan when he can use it to cut costs or otherwise increase efficiency by more than the cost of obtaining the additional funds, but he should not forget that "other things being equal the company that gets the credit it needs at the least expense wins."

The booklet is designed for widespread distribution among small business men and may be obtained by banks, or other financial institutions wishing to distribute it, or by individuals themselves, from the Superintendent of Documents, Washington 25, D. C., or from Department of Commerce field offices at 15 cents a copy.

# *Overhead Vacuum Lines Save Time In Discharging Units for Repair Work*

LOS ANGELES — An overhead vacuum system for discharging all refrigeration units brought into the shop has been rigged up by R. T. Caffee, who owns and operates R. T. Caffee Refrigeration Sales & Service here.

The system consists of an overhead line of ¾ in. pipe having 10 outlets for servicing the entire working area of the repair floor. A conventional type household water boiler with suction and discharge lines is attached to this overhead layout.

A ½-hp. Norge rollator pump powered by a ¼-hp. motor with a low pressure switch set at 28 in. of vacuum furnishes sufficient constant vacuum for the repair jobs.

Mr. Caffee states that this installation has saved him time and money in facilitating the refrigeration repairs.

The Caffee organization has actively participated in the current rehabilitation program for war veterans and has given employment training to nine men discharged from the armed forces. Four of this group are mechanics; the others are trainees.

In March, 1944, Mr. Caffee started his refrigeration repair business after having been employed with the Leo J. Meyberg, Norge distributor.

# *Boepple Heads Alco's Philadelphia Office*

GEORGE J. BOEPPLE

* * *

PHILADELPHIA—After four and a half years in the U. S. Navy, where he rose to the rank of Lieutenant Commander, George J. Boepple has returned to the field engineering force of the Alco Valve Co. to take over the Philadelphia office.

Mr. Boepple joined the Alco engineering staff in 1936 after working for two years as an apprentice brewmaster at the Anheuser-Busch Brewing Co. He later became manager of the Alco service department and was transferred in 1938 to the New York office as a field engineer.

Mr. Boepple's naval service began in June, 1941, as a Lieutenant (j.g.). He was promoted to lieutenant and lieutenant commander at about one-year intervals, and returned to inactive duty in October of last year. He served successively as an assistant machinery superintendent at the Brooklyn Navy Yard, on the staff of the Pacific Fleet maintenance officer, and in the planning section, on logistics, of the staff of Admiral Nimitz.

## Ridgley and Fidler Form New Refrigeration Firm

ABBOTSFORD, B. C., Canada — Ray Ridgley and Ray Fidler have opened a business on Essendene Ave., Abbotsford, B. C., specializing in the construction of built-in-refrigeration, fast-freezing, and cold storage service for farms and warehouses.

A former resident of Toronto and Buffalo, N. Y., Mr. Ridgley was previously employed by Frigidaire at Leaside, Ontario. Mr. Fidler is a native of eastern Canada and during the war served at Defence Industries, Ltd., Ajax, Ontario.

## Frontier Refrigeration Co. Organized In Buffalo

BUFFALO, N. Y.—A certificate of partnership has been filed here for the Frontier Refrigeration Co., 904 Main St. Partners are David M. and Margaret M. Zimmerman and Paul B. Readett.

# *Named Service Manager*

HARRY H. ERICKSON

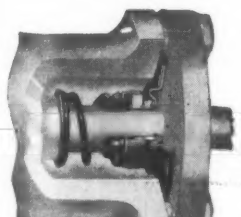
* * *

CHICAGO—Clarence S. Tay, manager of Appliance Distributors, Inc., here, has announced the appointment of Harry H. Erickson as service manager.

Before joining Appliance Distributors, Inc., Mr. Erickson was field service representative of the Chicago branch of Frigidaire and field engineer for Stewart-Warner Corp.

## Charlotte, N. C., Jobber Moves

CHARLOTTE, N. C. — Henry V. Dick & Co., Inc., refrigeration parts wholesaler, has moved to 311 E. Fifth St. here.

ROTARY SEAL REPLACEMENT UNITS *for* Refrigerator Compressors

*Available for Over* **752** *Models of Refrigerating Assemblies.*

Rotary Seal has pioneered in the manufacture of mechanical shaft seals. Because of this specialization it offers the best in shaft sealing.

ROTARY SEAL COMPANY
2020 N. LARRABEE ST., CHICAGO 14, ILL.
Canadian Office: 382 Victoria Ave., Westmont, Montreal

*Improved* PACKLESS VALVES

"Simplicity" Packless Valves

...have round hand wheels for easy hand grip

...have flat steel springs for positive spring action

...have raised body seat that controls travel of stem

...have uniformly level connections for ease in installation

...have unusually low overall height, reducing required installation space

...have multiple diaphragms, a construction outlasting any other possible combination

*Free*

*Write today or phone any branch office for our new, fully illustrated Refrigeration catalog.*

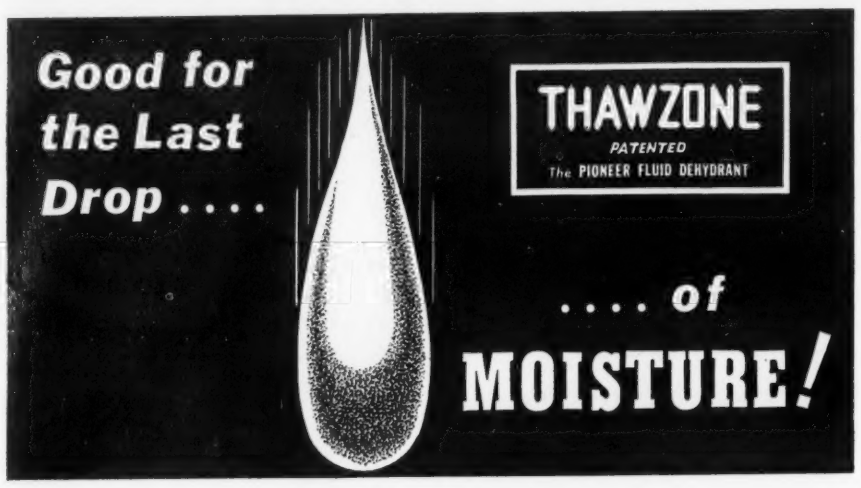
*Look Ahead with* AWP

Weatherhead

THE WEATHERHEAD COMPANY, CLEVELAND 8, OHIO
Plants: Cleveland, Columbia City, Ind., Los Angeles, Canada—St. Thomas, Ontario

This Weatherhead product is an outstanding example of the engineering "know-how" with which we have endowed all our refrigeration parts. The "Simplicity" Packless Valve was designed-in-use to insure economical long life and trouble-free operation. This product is available in a wide variety of sizes, both flared and solder types.

BRANCH OFFICES: NEW YORK • PHILADELPHIA • DETROIT • CHICAGO • ST. LOUIS • LOS ANGELES




Thawzone is not only excellent for most cases of moisture in refrigeration systems, but, paraphrasing a famous slogan, it is good for that last drop of moisture which becomes sidetracked or "trapped."

Thawzone is a MOVING dehydrant. It circulates, searches out that "last drop," destroying it chemically wherever it finds it. Sold by refrigeration supply jobbers in the United States and Canada.

We also make
TRACE
REFRIGERANT LEAK DETECTOR

A TINY AMOUNT
... A BIG JOB
... SMALL COST

HIGHSIDE CHEMICALS CO.
195 Verona Ave., Newark 4, New Jersey


# Refrigeration Problems
## And Their Solution

*By P. B. Reed*

**For Service and Installation Engineers**

**Manager, Refrigeration and Air Conditioning Division, Perfex Corp.**

## Temperatures, Pressures, And Heat Contents In Compression Cycle

For a further understanding of the changes in pressures and temperatures and of the amounts of heat involved throughout the compression refrigeration cycle, let us consider, as an example, a small refrigerator that has a heat load during a full 24 hour day of 19,200 B.t.u.; that is, during 24 hours, 19,200 B.t.u. of heat leak through the walls, get into the refrigerator when the door is opened, and are put into the refrigerator in the warm food.

If the condensing unit were to run all of the time 800 B.t.u. (19,200 ÷ 24) would have to be extracted each hour. It is advisable to give the motor and compressor some rest and cooling-off time, so the condensing unit will have to be able to remove more than 800 B.t.u. per hour in order to remove the 19,200 B.t.u. in less than 24 hours.

If the condensing unit is large enough to remove 1,200 B.t.u. per hour it will be able to refrigerate the refrigerator by operating only 16 out of the 24 hours (19,200 ÷ 1,200).

### TEMPERATURE-PRESSURE RELATION

Let us assume that the size of the evaporator is such that its temperature while the condensing unit is running averages 0°. Thus the average pressure of the "Freon-12" vapor boiled off from the liquid refrigerant in the evaporator is 9.17 pounds per square inch above atmospheric pressure, and is known as "gauge" pressure. The 9.17 pounds per square inch (abbreviated to p.s.i) gauge is also 23,87 pounds per square inch "absolute," that is, 23.87 p.s.i. above a perfect vacuum in which there is absolutely no pressure. (Zero gauge is 14.7 p.s.i. absolute.)

### 90° CONDENSING TEMPERATURE IN A 70° ROOM

Let us further assume that the temperature of the room in which the condensing unit is operating is 70°, but that the size of the air cooled condenser is such that the temperature of the condenser is 90°, that is, 90° is the condensing temperature. Some temperature difference between the condenser and the room air is necessary to promote rapid transfer of heat from the condenser to the room air. The condensing pressure will be 99.6 p.s.i. gauge or 114.3 p.s.i. absolute corresponding to the 90° condensing temperature.

After the vapor has been condensed at 90° into a liquid also at 90°, this liquid is further cooled to 70° by the time it passes on to the evaporator, still at a pressure of 99.6 p.s.i. gauge.

A throttling device of some sort, an expansion valve, a float valve, or a restrictor tube lets just enough liquid refrigerant into the evaporator to furnish the refrigerant needed —1,200 B.t.u. per hour. The amount of "Freon-12" to be fed into the evaporator to do this can be calculated.

### REFRIGERANT TABLES

Tables of "thermodynamic properties" of commonly used refrigerants at "saturated" and at "superheated" conditions are published in various refrigeration handbooks. The tables give the boiling temperatures and corresponding pressures, the volume in cubic feet per pound of the liquid and of the vapor, in a saturated and a superheated condition, the latent heat of vaporization in B.t.u. per pound and the amount of heat in the liquid, the saturated and superheated vapor at various temperatures, and other data not necessary in the present discussion.

These values change from one temperature to another, so the tables give the values (usually in steps of 2°) from at least as low as -40° to 120° or over.

### HOW MUCH REFRIGERANT MUST BE VAPORIZED

If we refer to the saturation table for "Freon-12" we find that at 0° it has a latent heat of vaporization of 69.96 B.t.u. per pound. So to absorb 1,200 B.t.u., we would have to boil 17.15 (1,200 ÷ 69.96) pounds of "Freon-12" if the liquid were at 0°.

But the liquid comes to the evaporators at 70° and must, therefore, be cooled down to 0°, which is the temperature at which it is boiling in the evaporator. In other words, the sensible heat of the liquid from 70° to 0° must be removed.

From the tables we find that at 70° the sensible heat of the liquid (heat content of the liquid) is 23.90 B.t.u. per pound and at 0° it is 8.25 B.t.u. per pound. The difference, 15.65 B.t.u. per pound, is the heat that must be removed from the 70° liquid in order to cool it down to a 0° liquid.

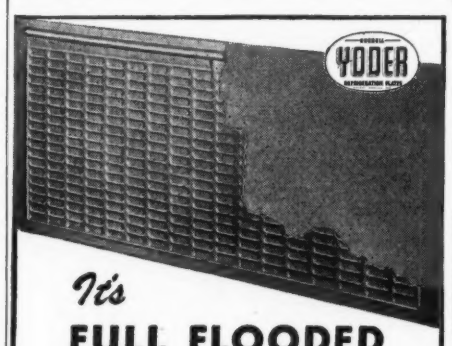
The only source of cooling effect is from the latent heat of vaporization absorbed by the boiling or

*(Continued on next page)*

You can be sure of the *right* refrigeration control . . . when you choose from the complete PENN line. PENN offers pressure and temperature controls in both single and double pole, with or without calibrated adjustments. This complete line includes controls for all "above freezing" applications—and in addition, controls for temperatures as low as -150° F., pressure controls for as low as 28" vacuum.

The accuracy and dependability of PENN refrigeration controls can be of great help to you. Controls can be supplied for all refrigeration requirements, for new installations or replacements. Ask your jobber—or write direct. There is no obligation. *Penn Electric Switch Co.*, Goshen, Ind. Export Division: 13 E. 40th Street, New York 16, U. S. A. In Canada: Penn Controls, Ltd., Toronto, Ontario.

PENN
AUTOMATIC CONTROLS
FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS




It's
FULL FLOODED
THE HUBBELL-YODER REFRIGERATION PLATE
• Every square inch of surface is prime heat pickup
ENGINEERING SERVICE, INC.
1311 West 80th St., Cleveland, Ohio
Sole Agents

Gilmer BELTS

Gilmer V-Belts are easy to sell, and they *stay sold*. That's because they fit perfectly, retain their fit, and give dependable service. And there's a Gilmer V-Belt for every air conditioning and refrigeration unit, for they're made from the largest assortment of V-moulds in the world.

Gilmer V-Belts are supplied in carefully chosen assortments that minimize capital investment. Stock rugged, long-lived, efficient Gilmer V-Belts. Get in touch with your jobber today.

L. H. GILMER COMPANY
Tacony, Philadelphia 35, Pa.
Division of United States Rubber Company

VISOLEAK

Detects leaks in refrigeration equipment before they cause damage to expensive installations and loss of costly products.

Years of use have proven *VISOLEAK* to be dependable, economical, safe and easy to use. See your refrigeration supply jobber or write for complete information.

finds hidden refrigerant leakage

WESTERN THERMAL EQUIPMENT CO.
1701 West Slauson Ave.,
Los Angeles 44, Calif.

# What Happens to Temperature, Pressure, & Heat Content In Compression Cycle

*(Continued from preceding page)*

changing of the liquid to a vapor; thus 15.65 B.t.u. must be deducted from the 69.96 B.t.u. per pound and the difference, 54.31 B.t.u. per pound is the net refrigerating effect of the refrigerant after it has used up 15.65 B.t.u. per pound of its gross cooling ability, in just cooling itself down to 0°, the temperature at which it is boiling in the evaporator.

### 22.1 POUNDS OF 'F-12' PER HOUR VAPORIZED TO ABSORB 1,200 B.T.U. PER HOUR

If, therefore, each pound of refrigerant has a net refrigerating effect of 54.31 B.t.u. per pound, 22.1 pounds of "Freon-12" (1,200 ÷ 54.31) will have to be boiled off and changed from a liquid to a vapor in the evaporator in order to absorb 1,200 B.t.u., and doing this 16 out of the 24 hours is required in order to refrigerate this cabinet, that is, to remove 19,200 B.t.u. of heat per day from this refrigerator.

### HOW MUCH HEAT IN SATURATED VAPOR?

Just after the vapor is boiled off from the liquid in the evaporator, it is known as "saturated" vapor, for the space contains all of the molecules possible at that pressure and temperature. Any more molecules released from the liquid would be forced back into the liquid. The space simply cannot hold any more vapor.

*If liquid is present* in an enclosed vessel, such as a refrigerant cylinder or an evaporator, *the vapor is saturated vapor*, for the liquid will automatically boil off more vapor until the pressure corresponds to the "saturation temperature" as given in the tables.

The saturated vapor has in it the heat of liquid at 0° which is 8.25 B.t.u. per pound, plus the latent heat of vaporization of 69.96 B.t.u. per pound or a total "heat content" of 78.21 B.t.u. per pound (8.25 plus 69.96). This is given in some tables as the "enthalpy" of the saturated vapor, and in other tables as simply the "heat content" of the saturated vapor.

As the liquid refrigerant flows through the evaporator it absorbs heat and changes from a liquid to a saturated vapor. The vapor thus produced remains as a *saturated* vapor just as long as there is still liquid present and the vapor and liquid are both at the saturation temperature of 0°, and under the pressure given in the tables (9.17 p.s.i.) as corresponding to saturation temperature.

Finally, toward the outlet end of the evaporator, the liquid that is put into the evaporator by the expansion valve, float valve, or restrictor tube, is all used up, that is, it has all been vaporized. Up to that point the vapor is saturated and the amount of heat in it is the "enthaly" or "heat content" of saturated vapor. In our example this is 78.21 B.t.u. per pound. Under this condition it has a volume of 1.637 cubic feet per pound.

### THE SUPERHEATED VAPOR

As the vapor continues to flow through the evaporator after the liquid has all been evaporated, it continues to absorb heat, but as there is no more liquid left to boil off into a saturated vapor and thus absorb the latent heat of vaporization, the vapor gets hotter than saturation temperature, and we say that it has become "superheated," but *it cannot superheat until it runs out of liquid refrigerant.*

Usually, enough liquid is fed into the evaporator so that there is some liquid being evaporated almost to the outlet end of the evaporator, so there is very little more space in the evaporator in which the vapor can become "superheated." This small space allows the vapor to superheat only about 5° to 10° in most evaporators.

That part of the evaporator in which liquid is evaporating is called "active." Any part of the evaporator taken up by the vapor being "superheated" is not very effective, for the heat absorbed in superheating is the specific heat of the vapor, which is very small compared with the latent heat of vaporization.

*During superheating, the pressure does not change, but remains at the pressure corresponding to saturation,* which in our example is about 9 p.s.i. gauge, 24 pounds absolute.

The 0° vapor now warmed to, say, 10° at the outlet of the evaporator, is further warmed (superheated) in the line from the outlet of the evaporator to the inlet or suction side of the compressor (this is known as the suction line). Also it is further expanded and becomes lighter (more cubic feet per pound). By the time it gets to the compressor it has superheated to 65°, let us say, which is 65° hotter than saturation temperature, but the pressure is still 9.17 p.s.i. gauge.

From the "superheat" table of 0° vapor superheated to 65°, we find that its volume has increased from 1.637 cubic feet per pound to 1.871 cubic feet per pound. It has added to it 9.53 B.t.u. per pound for the superheat tables show that 0° vapor superheated to 65°, has a heat content of 87.74 B.t.u. per pound.

### HOW MUCH VAPOR MUST THE COMPRESSOR PUMP?

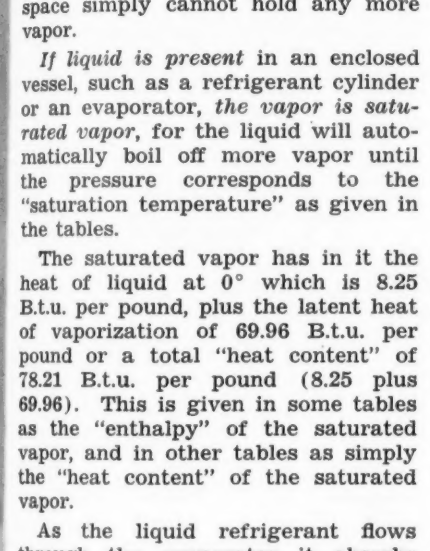
We found that, in order to remove 1,200 B.t.u. per hour from the evaporator, it would be necessary to evaporate 22.1 pounds of "Freon-12" per hour. Since for each hour of condensing unit operation 22.1 pounds of "Freon-12" must be vaporized in the evaporator from a liquid to a vapor, then 22.1 pounds per hour of "Freon-12" is the rate of circulation of refrigerant throughout the system, whether the "Freon" is in liquid or vapor form.

It is the rate of flow of liquid "Freon" at 70° and at 99.6 p.s.i. gauge, through the liquid line to and through the expansion valve; it is the rate of flow of the boiling liquid and saturated vapor in the evaporator at 0° and 9.17 p.s.i. gauge. It is the rate of flow of the superheated vapor at 65° and at 9.17 p.s.i. entering the compressor.

So it follows that the compressor must be able to pump 22.1 pounds per hour of "Freon-12" in vapor form at 65°, at 9.17 p.s.i. gauge and with a volume of 1.871 cubic feet per pound. Since one pound of the superheated vapor fills 1.871 cubic feet of space, then 22.1 pounds will fill 41.35 cubic feet (1.871 × 22.1). Thus the compressor must pump 41.35 cubic feet per hour of 0° vapor superheated to 65° and at a pressure of 9.17 p.s.i. gauge. Reducing this to one minute instead of one hour (41.35 ÷ 60 equals .687 cubic feet or 1,187 cubic inches per minute (1,728 cubic inches per cubic foot × .687 cubic feet).

If the compressor is the hermetic, direct-connected type driven at full motor speed of 1,750 r.p.m., the volume of vapor per revolution would be 1,187 ÷ 1,750 or .68 cubic inch. If it is a single cylinder compressor then the volume of the cylinder must be .68 cubic inch, and this means a cylinder $1\frac{5}{16}$ inch in diameter and $\frac{63}{64}$ inch long. We would refer to this as a "bore" of $1\frac{5}{16}$ inch and a "stroke" of $\frac{63}{64}$ inch.

*(To Be Continued)*



*'Our* BUSH COOLER *certainly keeps them* fresh, *Mr. Pete"*


**WANTED**
**PURCHASING AGENT**

**For nationally known refrigeration concern with headquarters in New York City.**

**Splendid opportunity for experienced man who is familiar with purchasing of parts and equipment in the refrigeration field.**

**Good Starting Salary**

**Replies held in strict confidence. Write, stating age, experience, and salary expected to Mr. A.C., c/o Suite 606, 12 East 41st Street, New York City.**



Freon Condensers • Dry-Ex Water Coolers • Evaporative Condensers • Forced Convection Units • Oil Separators • Liquid Receivers • Heat Exchangers • Pipe Coils • Hi-Peak Water Coolers • Flooded Water Coolers • Ammonia Condensers

Write for Catalog on any item

ACME PRODUCTS

**ACME INDUSTRIES**
**JACKSON, MICHIGAN**
*Offices in principal cities*



**WE'RE PLENTY BUSY SINCE WE TEAMED UP!**

That's right, when refrigeration engineers team up with Ranco Controls, they're both busy. The precision accuracy, dependable service, and handsome Stainless Steel cases of Ranco Controls make new friends quickly and strengthen the ties of old customers.

**Type C-1414 For Milk Coolers**

Keeps milk at right temperature even if location of temperature control switch is extremely cold.

See Your Ranco Jobber Today

**Ranco Inc.** COLUMBUS 1, OHIO



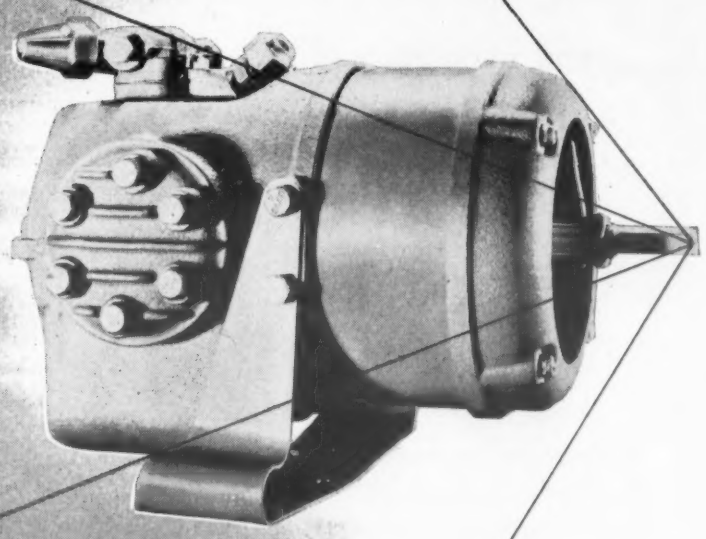
**Mills direct drive compressors GIVE YOU FOUR IMPORTANT advantages**

**Less weight**

*The new Mills ⅓ H.P. Direct Drive Compressor is 37% lighter than conventional belt-driven units of the same rating.*

**Occupy less space**

*It is less than half the size of other units of equivalent power.*



**Easily serviced in the field**

*Completely and simply adjusted or repaired in the field, factory returns are eliminated.*

**More efficient**

*Saving weight and size over hermetic units, the Mills Direct Drive has all the efficiency of conventional belt-drive compressors.*

**MILLS** *Industries, Incorporated*
Refrigeration Division
4100 Fullerton Avenue · Chicago 39, Illinois

# Low Temperature Refrigeration

By F. R. Zumbro and Terry Mitchell, Frick Co., Waynesboro, Pa.

*(Continued from Issue of January 7)*

One of the cardinal things in the design of a two- or three-stage system is the selection of motors of proper horsepower. There will be times when the load varies from the design conditions.

For instance, suppose we have a plant designed for -50° F. and that during certain periods this level increases to -28° F. If the intermediate pressure in an ammonia two-stage system were 10 lbs., under design conditions, the required horsepower on the booster compressor would be approximately 28.3 hp. at -50° saturated refrigerant suction temperature.

If the suction pressure should go to -30° saturated temperature, the discharge pressure would increase to approximately 20 lb., requiring 36.3 brake horsepower or an increase of some 28%.

Hence the applied horsepower should be in the neighborhood of 30% greater than the design horsepower. The high-stage compressor should likewise have a factor of safety in its motor, depending upon the intermediate pressure; for the conditions here mentioned an increase of about 15% should cover the requirements.

Furthermore, whenever synchronous motors are employed the starting torque and pull-in torque should be checked. It is suggested that whenever the duplex arrangement is employed, the starting torque be at least 50% and the pull-in torque 40%.

The port and valve areas of a booster compressor should be large in order to keep the pressure drops in the compressor at a minimum. This may be gauged by checking the properties of the refrigerant; for instance, with ammonia at -60° F. a ½-lb. drop in pressure corresponds to an incease in volume of gas of 9.5%. At -70° the same pressure drop would increase the gas volume 14%. At -80°, 20%. Even at the higher temperatures it is important; for instance, at -50°, 6.2%, at -40°, 5.5%.

At low temperatures, the height of the liquid in the evaporator should be taken into consideration. Assume we have an ammonia evaporator say 5 ft. in height, and it is considered to have 50% of head or liquid level at a suction pressure corresponding to -60° F. The pressure at the bottom of the evaporator is 0.732 lb. above the outlet pressure from the evaporator, which results in a temperature at the bottom of the evaporator coil of -56.5° F.

At -80° F. under like conditions, the temperature corresponding to the pressure at the bottom is -73° F. or a loss of 7° in temperature at that point.

Of course this effect depends upon the design of the system. If an accumulator is employed, the liquid ammonia at the bottom of the coil, in the case of the first example, is -60°F. so that it is in a sub-cooled condition. Under such conditions it means that in the design of the evaporator this temperature difference must be taken into consideration. At 20° F. the temperature difference in the above example would be less than 1° F.

Frequently, in low temperature installations, recirculation of the refrigerant is employed in the low side or evaporator in conjunction with an accumulator, the optimum location of which is beneath the evaporator coil. The amount in circulation can be anything from slightly more than sufficient refrigerant to develop the duty to as much as four or five times the quantity evaporated.

We find that often a circulation of approximately two times the quantity is satisfactory; however, in most cases we prefer to use a larger amount, upwards to five times the quantity. The surge tank or accumulator from which the refrigerant pump takes its suction has the refrigerant supply usually controlled by float level valves.

For really low-temperature installations it is best to cool the jackets of the low-stage compressors by water or by refrigeration connected to one of the higher stages. At low pressure the poundage of gas handled is quite small, so that the heat entering the gas from the pipe line, or from conduction as it enters the compressor, may be quite high in proportion. We have made it a practice to provide for refrigerated jackets on practically all compressors operating below -40° F. (saturated refrigerant suction temperature).

## Fig. 5. Test Chamber For Getting Temperatures As Low as —130°F.

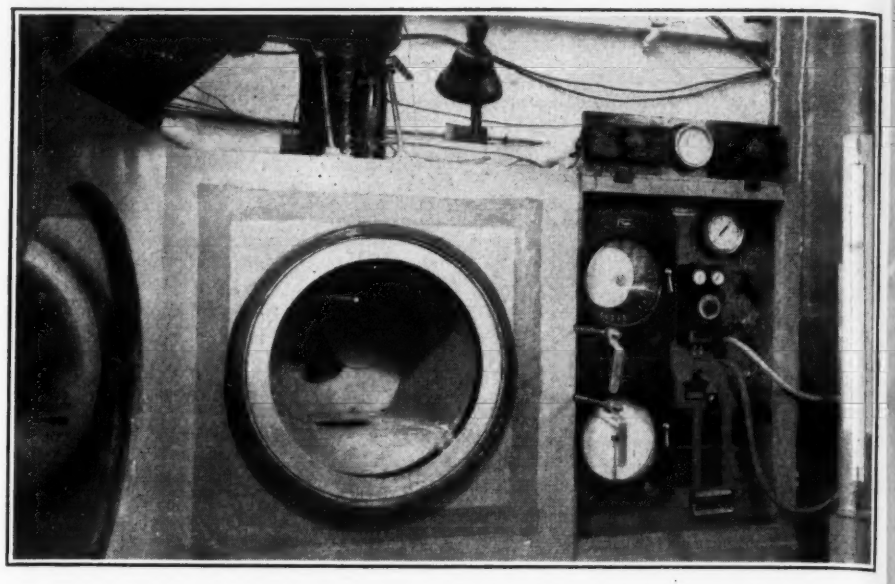


**Fig. 5. In this temperature-pressure chamber at the Frieze plant of Bendix Aviation Corp. for calibrating Radiosonde instruments, temperatures as low as -130° F. can be produced.**

In this kind of work various fluids have to be cooled in the form of brines, or for low-temperature process work. We refer particularly to calcium chloride, ethylene glycol, and methanol. Cooling these materials to the lowest temperature levels at which they may be successfully handled necessitates a careful consideration of the viscosity of the fluid within the cooling range.

For example, a 20% calcium chloride solution operating at a temperature level of around 10°, if cooled to a range somewhere in the neighborhood of -40° has a decrease in transfer value of about 40%. The power required for pumping brines at extreme low temperatures must also be carefully watched.

We might point out here that the pressure drop in pipe lines, on well designed low-temperature systems, is low. For example, with "Freon-22" at -100° F., the drop in pressure measured between the suction line

*(Concluded on next page)*

## Fig. 6. Booster and Second-Stage Compressors For Test Job

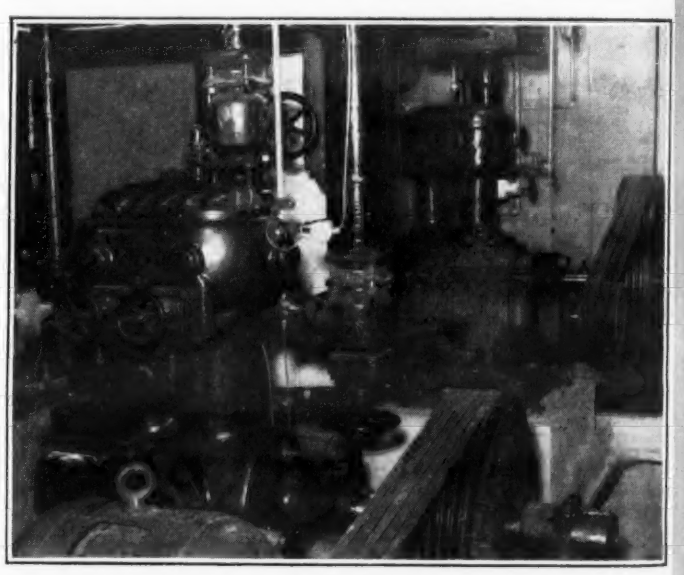
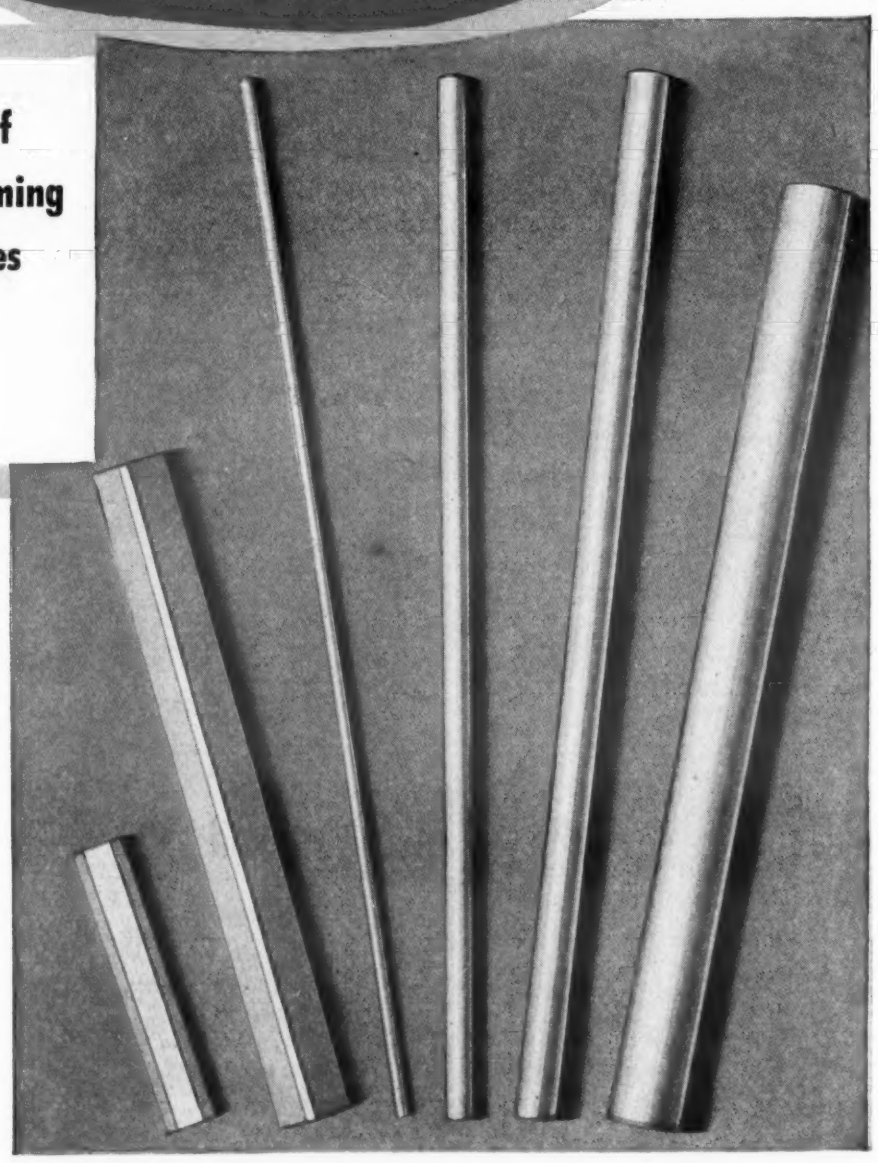


**Fig. 6. Booster and second-stage compressors handling "Freon-22." Note jacketed cylinder on booster.**


AGALOY
Corrosion Resistant
TUBING

You may be sure of tubing with proper forming and bending qualities when you buy AGALOY



Consider these reasons—

1. Careful annealing.
2. High strength.
3. Corrosion and heat resistant.

Accurate, cold drawn AGALOY tubing manufactured in seamless and welded is available in the following metals—

- L NICKEL
- INCONEL
- NICKEL
- MONEL metal
- 18-8 STAINLESS

*Sizes 5/8-inch O.D. and smaller.*

For all *small tubing* requirements AGALOY manufactures cold drawn low carbon, high carbon and alloys in sizes up to and including 5/8-inch O.D. *Write for catalog.*

AGALOY TUBING COMPANY • 75 WEST STREET, NEW YORK 6, N. Y.

Chicago Office: 221 North La Salle Street, Chicago 1, Illinois • *Mills:* Springfield, Ohio



Nationally famous for Performance

DESIGNED, ENGINEERED, MANUFACTURED BY *WESTERN* HEAT EXCHANGE EXPERTS

Out of the West come new, superior heat exchange units whose outstanding performance is making them famous throughout the world.

The complete d-h line includes air conditioning equipment, refrigeration equipment, airplane heaters, water and other liquid coolers, coils . . . each with outstanding qualities that invite comparison. They represent more than a generation of Western development. Into them go thorough knowledge of heat exchange principles . . . expert designing for proper proportion and balance . . . experience in manufacturing quality products with the finest factory facilities.

Our engineers can help you solve your heat exchange problem. Perhaps your answer is ready and waiting . . . perhaps only minor adaptation of standardized equipment is necessary. Write us about your needs.

FLOCOLD
Commercial cooling unit of superior design and performance
SPASAVER
Horizontal type air cooler first introduced by d-h
STRATA-FLO
Revolutionary type water cooler of unequalled efficiency
WAT-R-MISER
Evaporative liquid cooler that eliminates nine-tenths of ordinary operating costs

d-h LOS ANGELES SINCE 1910

drayer-hanson INC.

738 EAST PICO STREET · LOS ANGELES 21, CALIFORNIA

THE FIRST AND ONLY FACTORY OF ITS KIND IN THE WEST WITH COMPLETE FACILITIES FOR ENGINEERING, DESIGNING, MANUFACTURING, HEAT EXCHANGE EQUIPMENT

## Fig. 7. One of 'The Most Remarkable Installations Ever Made'

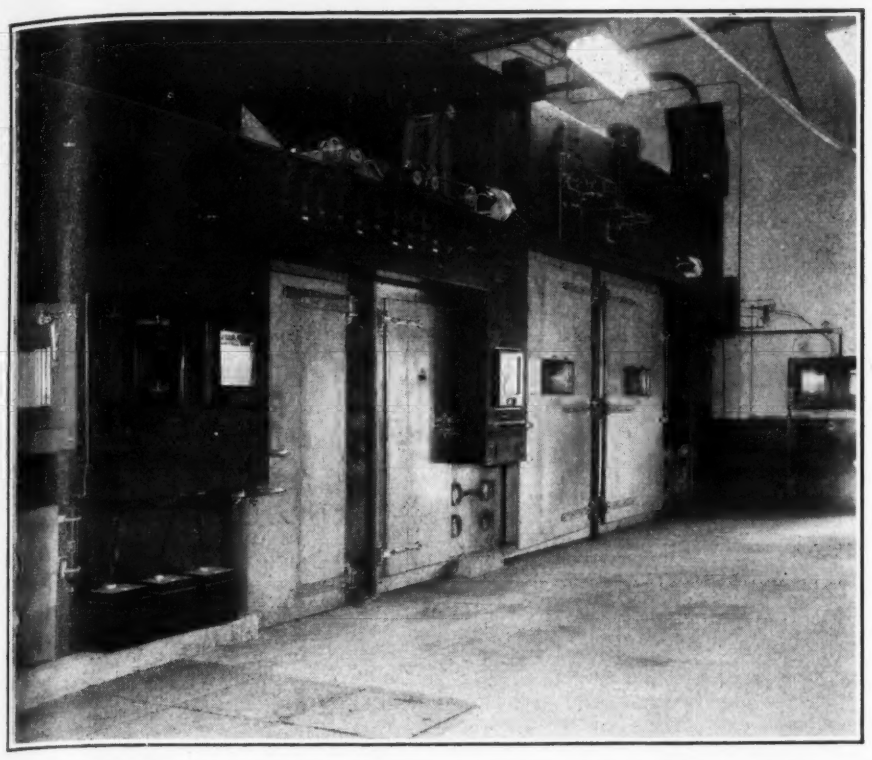


Fig. 7. Complete 3-room test plant at the Bendix Radio Division, Towson, Md., cited by the authors of this article as one of the most remarkable low-temperature installations ever made.

## Low Temperature Systems Described

*(Concluded from preceding page)*

and the intake port within a certain compressor showed a loss of only 0.06 lb.

At the Friez instrument plant of the Bendix Corp. in Towson, Md., the box illustrated in Fig. 6 has been in use since 1943. A two-stage "Freon-22" system produces temperatures here of -120 and even -130° F. This box, which is really a cylinder jacketed with "Freon-22," is used for calibrating the Radiosonde instruments which are sent up into the air (as high as 80,000 feet) under a balloon as illustrated in Fig. 7.

The pressure inside the cold cylinder can be lowered by means of vacuum pumps after the door, which contains 8 layers of plate glass, is clamped tightly on the gasket. What air remains in the jacketed cylinder is kept in motion by the fan at the back; the air passes over the instrument being tested and returns over the finned coils which are between the inner lining and the cylinder.

The duty here is less than 1 ton of refrigeration. The first-stage compressor is a 7¾ by 5 running at 600 r.p.m. and at a ratio of 9 to 1. The suction pressure falls down to 1.6 lb. absolute. The second-stage machine is a 4 by 4 two-cylinder combined unit running at 300 r.p.m.; suction pressure 0 lb. gauge; ratio 12.6 to 1.

Success of this installation, which uses the same method of "bucking" the cold with electric heat until the exact conditions are obtained, was the basis on which the larger Bendix plant, described below, was built. Both were designed and installed by the Paul J. Vincent Co., of Baltimore.

A most unusual job is to be found in the low-temperature test rooms of the Bendix Radio Division of Bendix Aviation, at Towson, Md. (see Fig. 8).

The way in which these three rooms were constructed was this: a heavy steel framework supports the doors and outer walls, while a lighter framework supports the stainless steel inner walls, floors, and ceilings with which each room is lined: Foamglass insulation, 12 inches thick on two of the rooms and 18 inches thick on the third, was applied.

### AIR LOCK INCLUDED

Machine room is in a pit below the three test rooms, there being no other space available. Each room has an air lock just inside the door where people enter. Each room also has a very large door, 6 by 8 feet in the clear, for moving in heavy equipment.

Automatic controls of such remarkable efficiency were applied to this job that the temperature and humidity are held constant to a high degree of accuracy. The temperature stays within ¾ of 1° F., and the humidity within 1¼%.

The room in the center is arranged to have a constant temperature of 122° F. and a constant humidity of 95%, maintained for as long as wanted. The switches controlling this room are merely marked "on" and "off."

The room at the far right is controlled by two program clocks, one for the temperature and one for the humidity. The range of temperature is from 68° F. to 154.4° F.; the humidity from 10 to 95%. The clocks can be set so that any given temperature and humidity will be held for a certain number of hours, then the controls will throw over to another set of conditions and later repeat the cycle. For that reason this is called the cycling room. It will also give varying degrees of temperature while retaining constant relative humidity. Or, the humidity may be varied while the temperature is held constant.

The third is the high-low-temperature room, and is capable of maintaining temperatures from 194° F. to -76° F. or less.

Humidity is added to the air in the rooms by injecting moisture from nozzles with compressed air. At high temperatures and humidities it is practically raining, and the moisture is condensed on the body of the person entering the room, until it runs off in streams. The operator wears a bathing suit.

Electrically heated clothes and the warmest fleece-lined outer garments of leather, complete with helmet and hood to prevent freezing of the eyeballs, are worn in the low-temperature room.

### CONTROL OPERATION

The controls first regulate the temperature in each room and later adjust the humidity, or the two conditions can be changed simultaneously. The refrigerating equipment runs continuously once it has been set, and the ultimate fine adjustment in temperature is gotten by adding electric or steam heat. This is indicated by the change in potential of electric current from a special thermostat.

Controls are a combination of compressed air and electric apparatus installed by the Johnson Service Co. The Foxboro Co. also worked with the others concerned in perfecting means of handling all these varied conditions by push buttons and switches, and in recording the results on roller strip charts. Transformers provide any voltage wanted, up to 30,000.

The refrigerating equipment consists of an 8¾ by 6 booster machine handling "Freon-22," discharging through a gas-and-liquid cooler into a 7 by 7 compressor. The 7 by 7 can be operated independently on a shell and tube brine cooler; the cold brine is used in the cycling room. The total connected load on the two machines is 80 hp., but the cooling load runs between 4 and 6 tons.

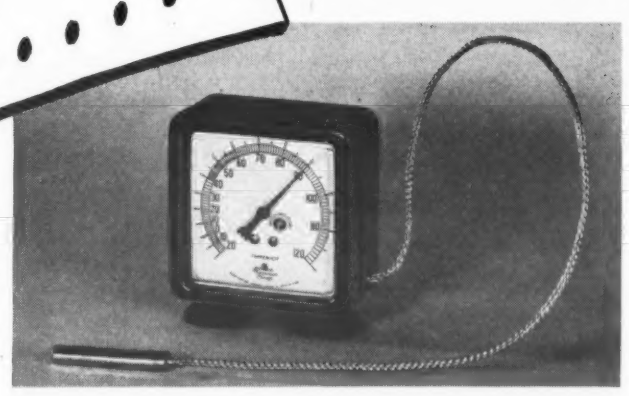
## Harry Pruitt Rejoins Salem Engineering

SALEM, Ohio—Harris Pruitt, discharged from the Navy this fall with the rank of lieutenant senior grade, has rejoined the staff of Salem Engineering Co. here as a specialist in commercial freezing equipment, according to an announcement by the company.

Mr. Pruitt originally joined the company early in 1941 and was assigned to the handling of munitions equipment contracts. He left late in 1942 to become a procurement officer in the Navy, in which capacity he covered the West and Southwest in search of war materials and equipment.

Prior to his association with Salem, Mr. Pruitt conducted his own engineering and equipment business in the Southwest.


Best tool in your kit....



Note large, legible scale and "Recalibrator" for keeping thermometer accurate. Also note illustration with back open showing method of coiling up capillary tubing.

**The MARSH "Serviceman"**

The "Serviceman" does what a pocket thermometer can't do. The remote reading feature permits tests under actual working conditions—with the refrigerator door closed and the indicator outside showing just what is going on at the point of measurement.

A generous length of capillary tubing is provided which coils handily into the back of the case, as illustrated, when the instrument is not in use. The Serviceman is a sturdy thermometer throughout, built to Marsh standards of precision and accuracy. The Marsh "Recalibrator" provides a convenient and certain means of keeping it accurate.

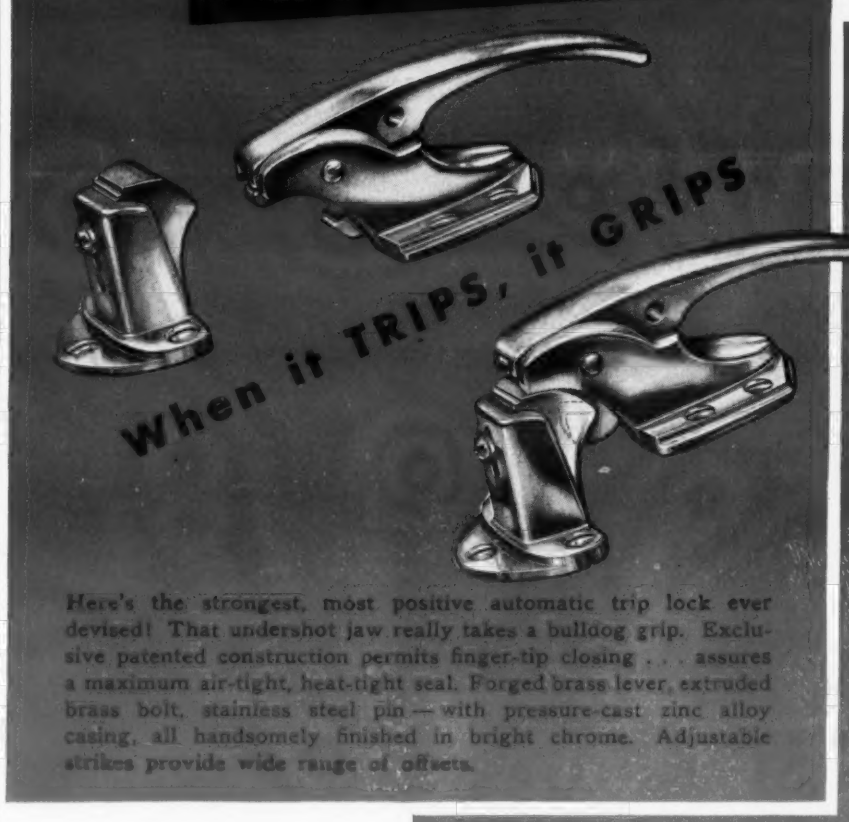
Here is the all-purpose thermometer for all domestic or commercial servicing. Volume production makes it possible to sell the Serviceman at the remarkably low dealer's net price of $6.25 F.O.B. Chicago.

JAS. P. MARSH CORPORATION, 2067 Southport Avenue, Chicago 14, Illinois
*Export Department: 155 East 44th Street, New York 17, N. Y.*

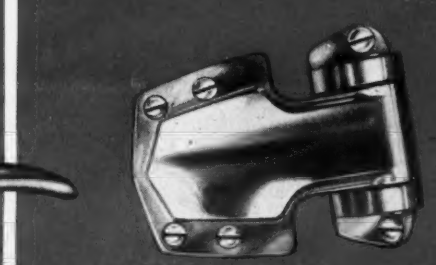
MARSH *Refrigeration Instruments*



*America's Quality Line of* COMMERCIAL REFRIGERATOR HARDWARE

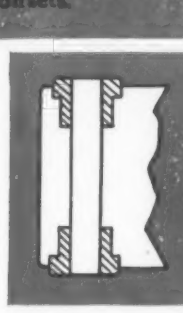



Here's the strongest, most positive automatic trip lock ever devised! That undershot jaw really takes a bulldog grip. Exclusive patented construction permits finger-tip closing . . . assures a maximum air-tight, heat-tight seal. Forged brass lever, extruded brass bolt, stainless steel pin — with pressure-cast zinc alloy casing, all handsomely finished in bright chrome. Adjustable strikes provide wide range of offsets.



**HINGES . . . for Lifetime Service**

Grand Rapids Brass Company designs its hinges for extra stamina, as well as good looks. Hinges shown are made with exclusive Oilite bronze bushings and stainless steel pins. This combination gives a wear-proof, sag-proof bearing surface . . . self-lubricated for life.



Showing exclusive hinge bearing construction. Shaded portion is self-lubricating Oilite bronze.

POSTWAR is here to stay . . . at Grand Rapids Brass Company. You can plan right now to standardize . . . for months ahead . . . on these and other products of this organization. You'll get top peacetime quality and engineering. You can depend on prompt, satisfactory deliveries. Our wartime activity has given us new techniques . . . new methods, new engineering "know-how" . . . all of which are reflected in today's products. Items shown on this page, and many others, are available now, in various sizes. We'll be happy to provide full information and quotations. Drop us a line today!

*Manufacturing a full line of hardware for commercial refrigerators*

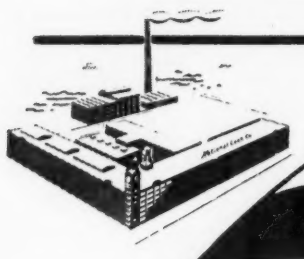
**Grand Rapids Brass Company**

Makers of Dependable Refrigerator Hardware for over 40 Years

*Grand Rapids 1, Michigan*

Headquarters

REFRIGERATOR HARDWARE
for domestic, commercial and low temperature cabinets



SURFACE TYPE HARDWARE
"THRU THE DOOR" HARDWARE
EDGE MOUNTED HARDWARE
PLASTICS
DIE CASTING

NATIONAL LOCK COMPANY
Refrigerator Hardware Division
ROCKFORD, ILLINOIS

# What's New

## 60% Weight Reduction Claimed for Blower

CLEVELAND — A new Airstream blower wheel made of three die-formed parts is announced by Morrison Products, Inc.

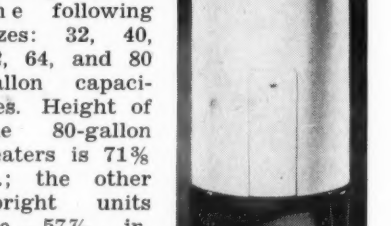
Pictured as "an outstanding advancement in the art of fan design," the wheel consists of two pressed channel-shaped end rings with integral hubs and a one-piece blade group, all of soft steel. The three parts are spot-welded together. adding "strength and rigidity" and making the wheel "literally one-piece."

Morrison claims a weight reduction of 40% to 60% has been made possible by the three-piece construction and by use of the intregal hubs to eliminate cast iron or screw machine parts. End mountings are said to distribute the wheel's weight close to the bearings, permitting use of small shafts and bearings and reducing shaft deflection and whip.

## Metal Gasket Sealed By Internal Pressure

NEW BRUNSWICK, N. J.—Bellow-seal, a serrated-type gasket recently introduced by Goetze Gasket & Packing Co., uses the pressure to be sealed to exert a corresponding sealing pressure on the flange faces, according to the company's announcement.

The gasket consists of two discs of metal (Armco iron, low carbon steel, monel or stainless steel) machined on their external faces, the company said, with standard serrations and welded together around their outer periphery. The gasket is described as combining the pressure and corrosion-resistant qualities of



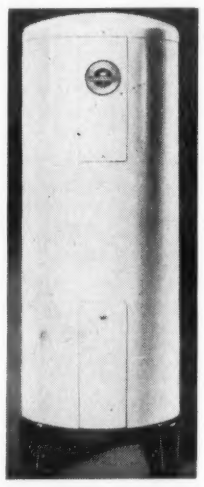
metal gaskets with the light bolting requirements of a softer sealing medium.

Line pressure entering the gasket's interior exerts expansion pressure in excess of the required sealing force, it was said.

## Frigidaire Introduces 6 New Water Heaters

DAYTON, Ohio — Six models of electric water heaters featuring "Radiantube" heating units directly immersed in water have been announced by C. J. Prashaw, manager of range and water heater sales for Frigidaire Division, General Motors Corp.

The heating units are designed in the shape of a sickle so that as they expand and contract any scale on the units falls off, the company claims.



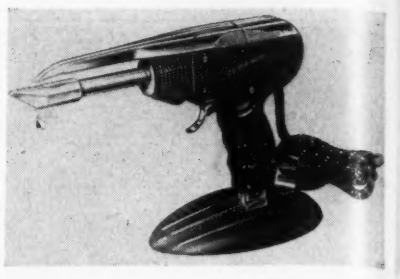
Five of the models are of upright design and are available with either double or single heating units in the following sizes: 32, 40, 52, 64, and 80 gallon capacities. Height of the 80-gallon heaters is 71⅜ in.; the other upright units are 57⅞ in. high.

The sixth model announced by Frigidaire is a 30-gallon table top heater equipped with a single heating unit.

A hot water trap which prevents circulation of hot water in the pipes when the faucets are closed is a feature of the new design. Other features claimed by Frigidaire include extra heavy spun-glass insulation more than 3 in. thick and a cold water baffle plate said to prevent incoming cold water from mixing with the water already heated.

A rust-proofed steel shell finished in white baked enamel and resting on a black enamel base encloses the galvanized steel tank. Drain faucet and thermostats are hidden from view by two cover plates.

## Trigger Controls New Type Soldering Iron



NEWARK, N. J.—Trigger-operated and fitted with a pistol grip, an automatic feed electric soldering iron named the "Eject-O-Matic" has been introduced by Multi-Products Tool Co. here.

Solder is fed from a reel concealed in the handle when the trigger is pulled, the company claims. A micrometer adjusting wheel in the handle is used to regulate the amount of solder deposited at the pull of the trigger. The unit weighs 1¼ lb. when loaded and is said to be perfectly balanced.

Non-corrosive tip is replaceable and is grooved to guide molten solder to point of application. Cooling vanes located on the tube near the handle dissipate excess heat before it reaches the handle, the company claims.

A stand is provided for the iron when not in use, or it can be employed when fine soldering is involved. When resting on the stand the iron can be moved forward through an angle of 45°, the company states.

## Rapid Heating Claimed For Soldering Iron

GLENDALE, Calif. — A soldering iron with built-in thermostatic heat control is now available on a nation-wide basis through supply houses, Sound Equipment Corp. here announces.

Called "Kwikheat" because it becomes heated for use in only 90 seconds, the company claims, the iron is powered by a 225 watt quick-heating element which is held in check by a thermostat. The "Kwikheat" iron has a hard-chrome plated steel octagonal shell, a cool safe plastic handle, and weighs only 14 ounces.

Six different tip styles made of corrosion-resistant copper alloy, can be interchanged on any "Kwikheat" iron.

## Gripping Device Holds Pipe Without Crushing

LONG BEACH, Calif.—"Nip-Grip," a gripping device which company officials claim will hold small pipe in any vise without crushing or marring the surface or threads, is being manufactured by the J. A. Campbell Co. here.

It consists of two light alloy retainer blocks in which hardened steel inserts are slipped to hold various pipe sizes. Inserts come in sizes of ⅛ in., ¼ in., ⅜ in., and ½ in.

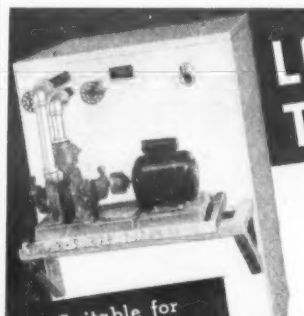
Springs automatically spread the blocks apart when the vise is opened. Nip-Grip can be positioned horizontally or vertically, held by pins.

PERFECOLD Inc.

IT IS MOST GRATIFYING TO KNOW THAT PERFECOLD DEALERS HAVE RECEIVED THE MOST CONSISTENT DELIVERIES OF COMMERCIAL REFRIGERATION EQUIPMENT DURING THE TRYING YEARS OF THE WAR.

REFRIGERATION EXCLUSIVELY

1940 SOUTH MAIN STREET
LOS ANGELES 7, CALIFORNIA



LOW TEMPERATURE - 34°

STORAGE TYPE WATER COOLERS

HIGH HOURLY RATINGS... FOR USE WITH ½ to 15 HP CONDENSING UNITS

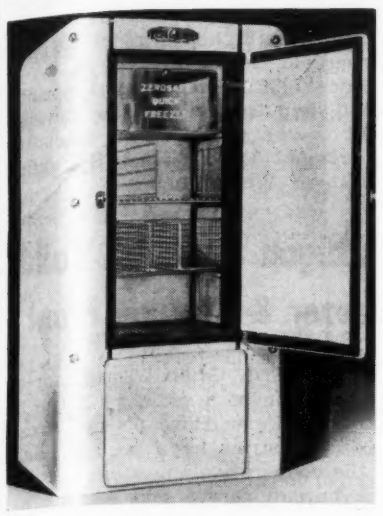
PACKAGED & REMOTE MODELS
IMMEDIATE DELIVERY

Suitable for
BAKERIES
BOTTLERS
FILM PROCESSING
JACKET COOLING
DRINKING WATER AND ALL APPLICATIONS

FILTRINE MFG. CO.,
53 Lexington Ave., BROOKLYN 5, N. Y.
"Manufacturers of Filters and Coolers for over 40 Years"

Filtrine HIGH EFFICIENCY WATER COOLERS

## Wilson Farm Freezer



This is one of 15 and 25-cu. ft. farm freezers being produced for Wilson Cabinet Co. by Goodyear Aircraft Corp. of Akron, Ohio, on a sub-contract basis.

## Electronic Unit Controls New Electric Blanket

NEW YORK CITY—Operated by electronic controls, an electrically heated blanket to retail at about $39.50 has been introduced by the Simmons Co. of mattress fame.

Although it is similar in appearance to a standard blanket, the new blanket contains a flexible heating wire. One conductor in the wire is a heating element; the other is known as a "feeler." The latter, said to be capable of detecting a change of 1°, sends impulses to the electronic control box which governs the flow of current.

The bedside electronic control resembles a midget radio in appearance and contains three electronic tubes which help regulate the heat. Operating cost is about the same as a small radio, the company claims.

Made of 75% wool, 25% cotton, the blanket comes in the double bed size only in five colors—cedar, rose, blue, peach, and green.

R. J. Cochran, who is general manager of the company's new electronic blanket division, and John Roemer, merchandise manager, were formerly with General Electric Co.

## Wider Applications Seen For Porcelain Enamel

PITTSBURGH — Research started in the early 30's has resulted in development of a new porcelain enamel adaptable to many products heretofore unfit for this type of finish, according to an announcement by O. Hommel Co. here.

Called "Tite-Wite," the new enamel can be applied nearly as thin as the best organic paint finishes, Ernest Hommel, president of the company said. He claimed the thin application "practically eliminates chipping which has long been the objection to porcelain enamel as a practical finish for many articles."

"Tite-Wite" is said to provide bonding strength and opacity "never before available" to the refrigerator, stove, washing machine, kitchenware, sign, and architectural industries.

Tests show reflectance readings of 75% to 80% and over when applications of 15 to 20 grams a square foot are applied, it is claimed. The company said that previous to this "revolutionary" enamel, it was necessary to apply from two to three times as much, increasing the chipping hazard.

Mr. Hommel said research initiated on the enamel in the early 30's was continued in the company laboratories and at the Mellon Institute. Interrupted by the war when the formula was nearly completed, experimentation was resumed after V-J Day.

## Prefabricated Locker Plant Introduced

MEMPHIS, Tenn. — Frozen Food Refrigeration Co. here, has introduced a new prefabricated neighborhood frozen food locker plant, containing 150 to 160 lockers, complete with chill room and sharp freeze.

The locker plant is so designed that it is adaptable to most neighborhood grocery and meat markets as it utilizes a space of only 18 ft. x 20 ft. and can be placed in the rear of most stores, the company claims.

Simplicity of construction allows the purchaser to erect the plant in a minimum length of time with little labor, it is said. Complete construction should not take over seven to 10 days.

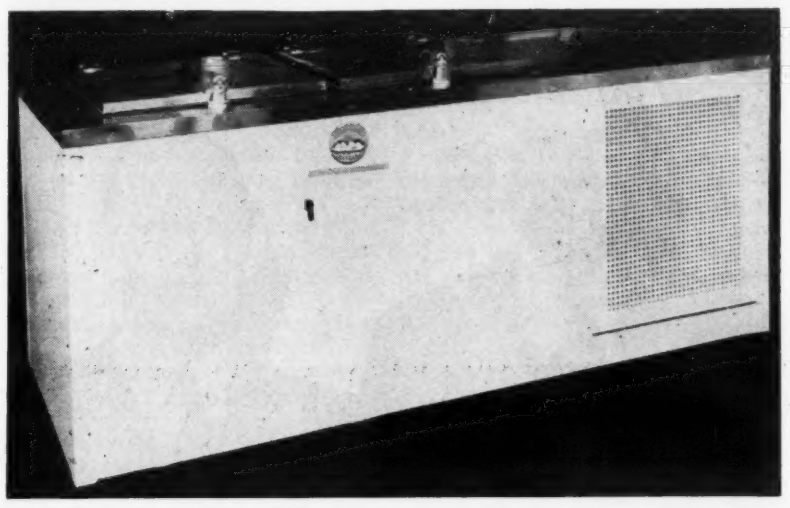
The plant is designed to sell at approximately $4,200 f.o.b. factory.

## G-E to Make Candy Cases for Whitman

BLOOMFIELD, N. J.—A new line of refrigerated candy display cases, featuring modern cabinets and new designs in refrigeration and cooling systems will be constructed for Stephen F. Whitman & Sons, Inc., of Philadelphia, manufacturer of Whitman's Candy, by the General Electric Co., it was revealed last week by C. M. Rowland, G.E.'s manager of Packaged Cooling Equipment Sales.

The new Whitman's display cases will be constructed by General Electric's air conditioning department.

## 'Pinocchio' Freezer Produced by N.Y. Concern



Included in the extensive "Pinocchio" line of food freezers being produced by Complete Refrigerator Supply of New York City is this 15-cu. ft. model.

* * *

## 'High Temperature' Line Planned by N.Y. Firm

NEW YORK CITY — Complete Refrigerator Supply here has started manufacturing high temperature commercial refrigerator equipment to be sold under the trade name "Pinocchio" in addition to its line of Pinocchio freezers, announces William J. Penachio, who heads the firm.

"We will be building all types of display cases, walk-in coolers, air conditioning, and self-service equipment, and we have contracted with coil manufacturers and compressor manufacturers to feature these items under our own name plate," said Mr. Penachio.

## Kingly Will Produce Portable Conditioner

MIAMI, Fla. — A portable self-contained air conditioner mounted on rubber casters, claimed to provide cooling, humidity control, and air filtering, has been designed by B. F. Kingly and will be produced by the Kingly Air Conditioning Corp. here.

I. B. Davis is president of the firm; Albert Miller, sales manager; Mr. Kingly, chief engineer; and Charles H. Elliott, factory superintendent.


"WHEN I OPEN MY OWN Self-Service STORE IT'S SHERER EQUIPMENT I WANT!"

"Before I went into service I saw what a great job Sherer Equipment was doing in the market where I worked. Made up my mind that my own self-service store after the war would be Sherer equipped . . . and that's for sure!" Sherer distributors have a wonderful equipment story for men like this . . . a story that means VOLUME and PROFITABLE SALES!

VEGETABLES . . . DAIRY CASES . . . REACH-IN REFRIGERATORS . . . WALK-IN COOLING ROOMS . . . MEAT & DELICATESSEN DISPLAY CASES . . . FREEZERS . . . all will be included in the Sherer franchise.

Serve-self food stores must have self-service produce and dairy displays to get maximum volume and profit . . . commercial refrigeration dealers must have them to sell.

Smart are the distributors who have planned to go ahead with Sherer. They know that Sherer self-serve display and storage cases for produce and dairy products are the best to be had — designed for the job, efficient in performance, economical in operation. For *bigger* and *better* business, your customers will favor the Sherer line!

SHERER

REFRIGERATOR PRODUCTS

SHERER-GILLETT CO., Marshall, Mich.



*Hauling costs go down rapidly as payload-deadweight ratios go up.*

Here's Progress!

5-TON TRUCK=500 GALLONS

1½-TON TRUCK=1,000 GALLONS

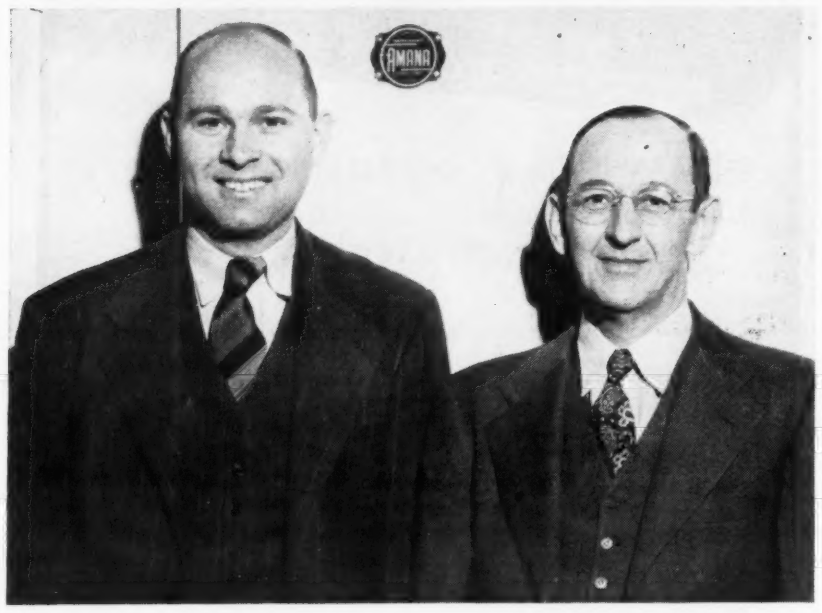
Today, a 1½-ton truck can refrigerate and deliver twice as much ice cream as could once be delivered by a 5-ton truck. That's what comes of lightening heavy-duty trucks and their refrigerating equipment with Alcoa Aluminum.

Such progress called for close cooperation between truck designers, refrigeration engineers and Alcoa metallurgists.

Alcoa does not design or build trucks or refrigeration equipment. Our role is assisting manufacturers in using Alcoa Aluminum to solve their problems—problems involving weight saving, corrosion resistance, heat transfer, and the like. Ask your supplier about aluminum equipment. ALUMINUM COMPANY OF AMERICA, 1975 Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA FIRST IN ALUMINUM

## Hafner & Lowell Join Amana Refrigeration Staff



OLIVER B. HAFNER

* * *

AMANA, Iowa—Oliver B. Hafner and Floyd C. Lowell, engineers, have joined the staff of Amana Society's Refrigeration Division here, the society announced recently.

Mr. Hafner was formerly with C. V. Hill & Co. of Trenton, N. J., and also managed Plant No. 2 of Luscombe Airplane Corp. of Trenton.

FLOYD C. LOWELL

* * *

Mr. Lowell comes to Amana from Universal Cooler Corp., where since 1942 he had served as eastern district manager.

Previously he had been refrigeration manager of C. V. Hill and was wholesale commercial sales manager for Kelvinator in Long Island, N. Y.

## Atchison 'Cave' Threat To Economic Security, Warehousemen Warn

ROCHESTER, N. Y. — Picturing the Atchison Cave cold storage facility as a menace to the future economic security of the public refrigerated warehousing industry, the New York State Association of Refrigerated Warehouses has placed before Secretary of Agriculture Clinton P. Anderson a resolution asking that the project be abandoned and dismantled.

(The Atchison Cave project, built at a cost of two million dollars as an emergency facility, is situated in an 11-acre cave near Atchison, Kan., and is refrigerated by equipment in a structure adjacent to the cave entrance.)

Unanimously passed at a joint meeting here of the executive and legislative committees of the association, the resolution requests discontinuance of the project because it "was converted for cold storage purposes to meet an anticipated emergency, which now, on completion of the project, no longer exists."

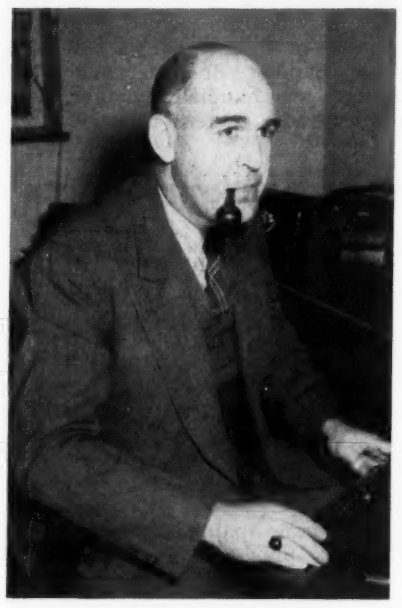
Other reasons given are that "its sound operation from both a physical and economic standpoint is doubltful if not impossible" and that "its operation is in a serious handicap to the reconversion efforts and is a threat to the future economic position of the public refrigerated warehousing industry."

Through the resolution, the association told Mr. Anderson that the public cold storage warehousing industry has "rendered valuable service to the Government through the expansion and use of their facilities for the handling and storage of perishable food products for the Armed Services and in connection with the War Food Program." The use of these warehouses by Governmental agencies is being rapidly curtailed, the resolution points out, "resulting in a large volume of unoccupied cooler space now being available."

For these reasons, the resolution says, the association requests that the Government "proceed immediately to abandon and dismantle this project as is being done with many war plants, and dispose of the machinery and equipment as 'surplus property.' "

Copies of the resolution were sent to the Director of Reconversion, the chairman of the Board of Smaller War Plants Corp., the chairmen of appropriate Congressional committees, and various congressmen.

## Clifford Takes Sales Post in Hawaii



L. W. CLIFFORD

* * *

HONOLULU, T. H.—Charles E. Nolan, promotional manager of the Hawaiian Electric Co., Ltd., recently announced the appointment of Lyndon W. Clifford as electrical sales development councillor for the company.

Mr. Clifford, a veteran of 22 years experience in electrical sales development with the Westinghouse Electric Corp., assumed his new duties Jan. 1.

Prior to his appointment, Mr. Clifford had served in Hawaii as an instructor at the Iolani school, in 1925, and in 1941, he did sales training work with the Hawaiian Electric Co. for four months, representing the refrigeration specialties department of the Westinghouse plant at East Springfield, Mass.

Since 1939 he has been responsible for distributor and dealer development of the refrigeration specialties department at the East Springfield Works of Westinghouse.

## Michigan Co-op to Build Freezer & Storage Plant

HAMILTON, Mich.—Funds for the construction of a plant to house the Hamilton Farm Bureau's new frozen foods industries have been set aside in the cooperative's postwar reserves. The bureau serves 800 Allegan and Ottawa county farmers.

Andrew G. Lohman, manager, said the company plans to erect a large cold storage plant with facilities for the freezing of eviscerated poultry, eggs, fruits, and vegetables, and perhaps limited quantities of pork and beef.

In flush production seasons, the cooperative plans to store large quantities of eggs in its own plant. In recent years it has found it necessary to store eggs in Chicago and Detroit.

The expansion program also includes plans for the construction of a new poultry dressing plant, a modern slaughter house for cattle and swine, and perhaps a creamery. A central heating plant is included in the plans.

Construction will be started in the spring, or as soon as building materials become available, it was announced.

## Pittsburgh Firm Named Sterilamp Distributor

PITTSBURGH—The Pennsylvania Ultraviolet Co., with headqaurters at 717 Highland Bldg., Pittsburgh, has been appointed Sterilamp distributor in the tri-state area of Western Pennsylvania, Eastern Ohio, and Northern West Virginia, according to Charles W. Flood, Jr., manager of the Westinghouse Sterilamp department.

The new company, operated in partnership by brothers, Cooke Bausman, Jr., and Sanford Bausman, will serve as a sales and engineering firm, planning and specifying bactericidal ultraviolet equipment.

The Bausman brothers, both natives of Pittsburgh, were honorably discharged recently after serving in combat with the Army Air Corps in the European theater of operations. Cooke Bausman held the rank of Lieut. Colonel in the 8th Air Force, and his brother was a Corporal in the Intelligence Section of the 9th Air Force.

Sanford Bausman was formerly a heating and air conditioning sales engineer for T. King McCreery Co., Inc., Pittsburgh.

## New Taylor Catalog Shows Refrigeration Controls

ROCHESTER, N. Y.—The Taylor Instrument Companies here has announced publication of Catalog No. 300, a 36-page booklet dealing with the application of control instruments to the refrigeration field.

The publication is divided into two sections, one covering applications to show certain processing requirements in refrigeration, and the other dealing with the proper instruments for the various types of applications.

Actual THERMOBANK Installation In Locker Storage Plant of 500 Locker Capacity. The contracting firm was the Refrigeration Corporation of America, 241 W. 64th Street, New York, N. Y.

WITH the THERMOBANK a zero degree system is just as automatic as a 40 degree system—in fact more so.

It never needs to be defrosted because it defrosts itself automatically without the use of brine sprays, water sprays or electric heaters.

Write for Bulletin "N"

KRAMER TRENTON CO.

*Trenton, New Jersey*

ARE YOU

"BRAND-CONSCIOUS"

WHEN YOU BUY INSULATION?

RETAIL surveys show the public purchases much more "brand-name" merchandise than any other kind. That's one important reason why Gold Bond Zerocel is your best low-temperature insulation buy. It's a sister product of famous Gold Bond Rock Wool Home Insulation preferred by architects, builders and home-owners for years. That's why it's like meeting an old friend when your customers see the Gold Bond stamp on your Zerocel-insulated products. (Free Zerocel stickers for appliances and job signs for installations are available on request.)

Inch for inch Zerocel is one of the *most efficient insulators for practically every kind of low-temperature installation.* It has a thermal conductivity (or "K" factor) of only 0.24 Btu. at 60°F. mean temperature. To reduce the refrigeration load (and size of your compressor) to the lowest possible minimum, you can install Zerocel much thicker than ordinary insulations for the same or less money.

CABINETS

STORAGE

LOCKERS

HOME FREEZER

ZEROCEL PROPERTIES:

- Completely fireproof
- Will not absorb moisture or odors
- Will not settle
- Immune to fungus, rot decay, and vermin
- Light in weight
- Easy to cut with knife

*Zerocel is manufactured to U. S. Dept. of Commerce Standard CS-105-43. Samples and literature on request.*

BUILD BETTER WITH GOLD BOND ZEROCEL ROCK WOOL INSULATION

INDUSTRIAL DIVISION, NATIONAL GYPSUM COMPANY
GENERAL OFFICES, BUFFALO 2, NEW YORK
*Branch Offices: New York City, Boston, Philadelphia, Washington, D. C. Chicago St. Louis, Los Angeles, Dallas, Cincinnati, Luckey, Ohio.*

# Air Conditioning Performs 4-Fold Function In Bearings Plant

## *Air Washers Are Employed in 2,000-Ton System*

PHILADELPHIA—To protect high precision accuracy in vital bearing plants, SKF Industries here uses air conditioning equipment with a capacity of 2,000 tons of refrigeration.

Installed by York Corp. engineers in the company's three plants including a new windowless plant, the air conditioning is vital in safeguarding production of tons of bearings a day ranging in size from the diameter of a dime to 6 feet. A total of 550,000 cubic feet of cool, filtered air a minute is circulated through the plants by means of a chilled water system and electrostatic air cleaners.

Air conditioning at SKF performs four essential jobs, all aimed at improved production and a reduction of spoiled parts. They are:

1. Helping to prevent stain-producing humidity from attacking finely finished bearing parts, or assembled bearings during handling, in assembly, and final inspection.
2. Helping to maintain accurate dimensional controls not affected by varying outdoor climate conditions.
3. Keeping factory atmosphere free from lint and dust, dirt, vapor, and grinding grit which normally collect on the oiled surface of bearing races, balls, and rollers.
4. Preventing excessive summer temperature from increasing workers' fatigue and lowering efficiency and morale.

### MOISTURE IS THE ENEMY

The smallest of several thousand different bearings made at SKF are ground to a surface finish accurate to one millionth of an inch, about the same thickness as the film of moisture left by breathing on a mirror. Even a microscopic bit of moisture, such as perspiration on the hand, will attack the surface of a bearing and eat into its finish in time. Once in contact with the polished steel, it cannot be easily removed and the corrosion will continue until the bearing is repolished.

To guard against this before air conditioning was installed, SKF bearings carried a heavier coating of oil to protect them during handling. But this protection in itself created another hazard. The customary dust, grinding grit, and haze in factory air collected more easily on the heavier oiled surface and threatened to cause destructive abrasions on the bearings when they were put in use in high speed operations occasionally as fast as 50,000 r.p.m. In addition, infinitesimal quantities of grit and dust on the bearings made size gradings complicated.

### CONDITIONS MAINTAINED

In the new windowless plant of the company near Philadelphia, the entire manufacturing, assembly, and inspection areas are kept at a constant temperature of approximately 80° and a relative humidity of 45%. All three of the SKF plants have 2 inches of roof insulation and steam coils to balance temperatures in winter.

Electrostatic air cleaners in the critical assembly and inspection operations filter out nearly 100% of all smoke, haze, and dust particles delivering an atmosphere equivalent in purity to that found only at extremely high altitudes of the world.

To maintain moisture, temperature, and purity control over the air, 4,000 gallons of chilled water are poured into air washers at 43° and leave at 55°. Altogether 11 separate "Freon-11" centrifugal water cooling systems are at work in the new plant air conditioning a total area of 379,200 square feet. Each of the systems includes a fan, washer, heating coils, air cleaning apparatus, and automatic controls supplied by three 500-ton compressors and one 400-ton compressor.

At SKF Plant No. 1, a similar water cooling system of 105-ton capacity air conditions 16,200 square feet of space with 30,000 cubic feet of air a minute in assembly and final inspection departments on bearings. Two 60-hp. "Freon-12" compressors are used. One electrostatic air cleaner handles the filtering. The third plant equipped by York, the Atlas Ball Bearing final inspection Plant No. 2, conditions 12,800 square feet of space with a 325-hp. "Freon-12" compressor and an electrostatic air cleaner.

### WHAT IT MEANS TO WORKERS

Before controlled indoor weather was installed at SKF, summer temperatures rose as high as 94° making painstaking inspection and assembly work for women almost intolerable. By dropping these peak temperatures 15° to 20° and maintaining a constant low humidity, general plant efficiency and morale has been increased in all departments.

In addition, the technical problem of excessive moisture on the hands of operators has been largely eliminated and the heavy oil film formerly used on the bearings has been reduced to a point where it is barely visible to the naked eye.

# *New Cargo-Passenger Liners Will Have 'Independent' Air Conditioning System*

NEW YORK CITY — A rapidly widening market on the high seas for air conditioning and refrigeration equipment is indicated by Carrier Corp.'s recent installation of year-around air conditioning equipment in nine new cargo-passenger vessels of the Grace Line.

Many shipping executives feel that trans-ocean travelers to whom speed is paramount will fly, and that the consequent discounting of the speed advantage held by the large luxury liners will result in a general stepping-up of passenger conveniences on smaller cargo-passenger vessels. Several shipping lines are said to believe that their smaller ships can furnish as much comfort and luxury to ocean voyagers as the larger "deluxe" liners.

For this reason, the Grace Line's move in air conditioning the nine ships is regarded in maritime circles as extremely significant.

The vessels, Maritime Commission long-range C-2 type, will operate between East Coast ports and the west coast of South America. Using Carrier's conventional re-circulation system, each ship will have three independent systems: one for the club lounge, bar, and dining salon; one for the crew's mess and the petty officers' mess; one for the 29 first-class staterooms, the officers' quarters, the captain's quarters, and the barber shop.

Each vessel is provided with three small cargo compartments totaling 5,300 cu. ft. gross volume arranged for temperatures of 0°, and four large cargo compartments totaling 120,000 cu. ft. gross volume, designed primarily for transportation of bananas. These large cargo compartments are provided with special controls for accurately maintaining the delivery air temperature.

There are a total of five compressors, one for each compartment and the fifth compressor being a complete spare at all times. The control of the plant is completely automatic, both as to operation of the compressors and temperature control in the various compartments.

## Cincinnati Conditioning Firm Incorporates

CINCINNATI—Floyd & Co., Inc., has been incorporated to succeed the personal ownership of Morris Floyd doing business as Floyd & Co. in the installation of gas heating and air conditioning equipment.

Incorporators are Morris Floyd, William R. Collins, and Mary Richmond.

## New Los Angeles Concern

LOS ANGELES — Beverly Air Conditioning Co. is the firm name under which Anthony A. Stahl and Ben Laidman have published a certificate that they are conducting business in refrigeration and air conditioning equipment and appliances at 130 N. Larchmont Blvd. here.

# Richard Panlener Leaves Vilter For Marquette U. Post

MILWAUKEE — Richard J. Panlener, until recently manager of the price and data division of Vilter Mfg. Co., has returned to Marquette University's College of Engineering to direct reorganization of the co-operative system of education that gave him his start in the air conditioning and refrigeration field.

Mr. Panlener resigned his position at Vilter to accept the assignment, with the title of director of industrial relations.

The cooperative system, under which students spend equal time in the classroom and in practical work in industrial plants of southeastern Wisconsin, was discontinued during the war. Mr. Panlener is now making arrangements for resumption of the program with the opening of a new "trimester" March 1.

It was while he was attending Marquette that Mr. Panlener went to work for Vilter. He was retained by the company after receiving his bachelor of mechanical engineering degree in 1934.

While with Vilter, Mr. Panlener taught air conditioning at the Milwaukee Vocational School and wrote and lectured on that subject and refrigeration. He is chairman of the Milwaukee section of the American Society of Refrigerating Engineers.

At Marquette U. he was active in several organizations including Pi Tau Sigma and Alpha Sigma Nu, national honor societies.


Prevues of Our
1946 CATALOG
Will Be Released
Sometime In March

*Featuring a Complete Line of*

Refrigeration Units,
Parts & Supplies
Electric Motors and Motor Parts
BRUNNER — KELVINATOR
Condensing Units
HERMETIC Units and Parts
LYONS—Metal Shop Equipment
SKILSAW—Electric Hand Tools
B46—BULLETIN NOW OFF
THE PRESS

*Write for your copy today*

Wholesale Only

SERVICE PARTS CO.
2511 Lake St., Melrose Park, Ill.



B.A.C.
EVAPORATIVE CONDENSERS OUTDOOR
3 to 50 T. R.

*Unequalled in*
• *Efficiency* • *Construction*
*Economy of Installation and Operation*

BALTIMORE AIRCOIL COMPANY
402-408 Colvin Street Baltimore 2, Md.
*A few desirable territories open for representatives*

"Most Stoker Prospects Are STOKOL Prospects"

**Stokol blankets the stoker market! There are models for all sizes of homes, using all types of coal. Bin feed or hopper installations are available. There are commercial and industrial types. Practically everyone who heats with coal is a Stokol prospect. That's why we say — *Most Stoker Prospects Are STOKOL Prospects!* And that's just one of the big reasons why the Stokol dealer franchise is one of the best in the business, and why Stokol is one of the leaders. Another is the long list of Stokol selling features. Beauty, convenience and safety are combined with rugged efficiency and engineering dependability. It will pay you to investigate the Stokol profit opportunities for you as a dealer in your market. We invite you to mail the coupon today.**
***Stokol Stoker Company, Incorporated.***

STOKOL STOKER CO., INC.
1145 E. 22ND ST., INDIANAPOLIS 7, IND.
Gentlemen: Send details of Stokol profit possibilities for me as a dealer.
NAME_____
ADDRESS_____
CITY_____ STATE_____
ACFN

Act Now—Clip and Mail Coupon Today!

# INSULATING FACTS

**FOR COLD STORAGE AND LOCKER PLANT OPERATORS**

● Whether you are building or remodeling your cold storage or locker plant, you'll find valuable information in this "HAND BOOK ON COLD STORAGE CONSTRUCTION." It tells how to figure heat loss, how to estimate amount of insulating material needed for a job. It gives helpful details on construction and vapor-proofing. It also explains in detail how and why Redwood **BARKWOOL** gives you these nine vital advantages:

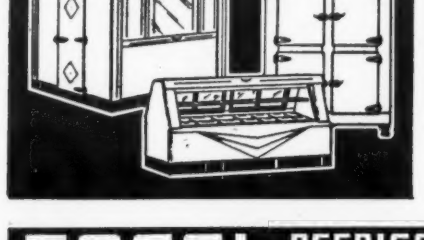
**EFFICIENCY • RESISTANCE TO MOISTURE • PERMANENCE • ENDURANCE • UTILITY • FIRE RESISTANCE • ODORLESS • VERMIN REPELLENT • ECONOMY**

For your free copy—Address
Redwood Fibre Products Co., Inc.
Dept. E, 228 N. LaSalle St., Chicago 1, Ill.

**REDWOOD BARKWOOL INSULATION**
A PRODUCT OF
**REDWOOD FIBRE PRODUCTS COMPANY, Inc.**
SANTA CRUZ, CALIFORNIA

REDWOOD BARKWOOL INSULATION





**GET SET WITH FOGEL**

INQUIRE NOW ABOUT OUR COMPLETE LINE

INTERESTING PROPOSITION TO QUALIFIED DISTRIBUTORS

A FEW TERRITORIES STILL AVAILABLE

**FOGEL** REFRIGERATOR COMPANY 5400 Eadom St., Philadelphia 37, Pa. • Since 1899


# Refrigeration Research Foundation Lists 20 Grants For Various Projects

CHICAGO — Twenty grants-in-aid totaling $43,700 have been made available to 18 college scientists and one government expert by The Refrigeration Research Foundation for new or continuing investigation of various phases of food preservation.

Largest of the grants, one for $5,000, will be used by Dr. B. E. Proctor, professor of food technology at the Massachusetts Institute of Technology. His project is entitled "Frozen precooked foods. Their handling, microbiology, freezing, and refrigerated storage at different temperatures."

### JENNINGS WINS GRANT

Two grants of $4,000 each were placed at the disposal of Dr. H. B. Jennings, chairman of the department of mechanical engineering at Northwestern University, and Dr. W. L. Mallmann, professor and research professor of the department of bacteriology at Michigan State College. Dr. Jennings will conduct research on "Low temperature psychrometry and moisture behavior at sub-freezing temperatures," while Dr. Mallmann will make "A study of refrigeration methods, especially as to the maintenance of desired relative humidities, with respect to the preservation of various food products."

Dr. Mallmann was named in a second grant of $500 for a project involving "A study of aerosols to explore their application to refrigerated warehouses."

Kansas State College's Dr. Gladys E. Vail, professor of food economics and nutrition, also was named in two grants and will share a third investigation with two colleagues. The sum of $2,000 will enable her to look into "The effect of methods of handling frozen meat after removal from frozen storage on the quality and palatability of the cooked product," and another grant of $3,000 will be used to find out "The effect of freezing and refrigerated storage on the quality of precooked foods. I. Meats."

In cooperation with Dr. G. Lowe Hall, of the department of chemistry, and D. L. Mackintosh, of the department of animal husbandry, Dr. Vail will attempt to learn "The effect of different frozen storage temperatures upon certain characteristics of meat. I. Pork," through a grant of $1,400.

### ODOR REMOVAL AND STORAGE LIFE

Another researcher designated in twin grants is Dr. R. M. Smock, associate professor of pomology at Cornell University. One grant of $500 is for a project labeled "Odor removal in refrigerated storage," and the other, of $2,500, is for a study of "Lengthening of the storage life of fruits by removal of volatile materials produced by the stored products from the atmosphere of the refrigerated room."

"Dried fruit storage" is the subject assigned to W. T. Pentzer, senior physiologist of the U. S. Bureau of Plant Industry, Soils and Agricultural Engineering at Fresno, Calif. The amount of this grant is $1,000.

### SHRIMPS AND APPLES

Dr. E. A. Fieger, professor of chemistry and head of the department of agriculture chemistry and biochemistry at Louisiana State University will study the causes and prevention of undesirable changes in the quality of fresh and frozen Gulf shrimp in refrigerated storage, with a grant of $3,000. At Rhode Island State College, Dr. S. A. Pieniazek, assistant pomologist, will investigate the seasonal variations in the rate of transpiration of stored apple fruits with the help of a $500 grant.

The Foundation granted $1,500 to be used by Dr. H. H. Plagge, assistant professor in the department of horticulture of Iowa State College, and Dr. Pearl P. Swanson, food and nutrition research professor there, to find out about "Retention of nutritive properties of foods by refrigeration. I. The effect of ripening refrigerated storage, and methods of handling on vitamin $B_1$ and $B_2$ of Midwest varieties of apples."

### TO CHECK 'CHILLING INJURY'

With a grant of $1,800, L. L. Morris, University of California instructor in truck crops and a junior olerculturist, will make "An investigation of the 'chilling injury' to certain vegetables during cold storage." "Heat transfer aspects of refrigerated warehouse packaged goods in steady and unsteady state as a function of physical properties and conditions" is the project of Dr. Carl F. Kayan, associate professor in the department of mechanical engineering at Columbia University, who was granted the use of $2,000.

The handling, freezing, and refrigerated storage of eggs at different temperatures will be studied by Dr. A. R. Winter, associate professor in the department of poultry husbandry at Ohio State University. The Foundation granted $3,000 for this work.

### THERMAL CHARACTERISTICS OF FOODS

Dr. L. H. Bartlett, associate professor of mechanical engineering in the Bureau of engineering research at the University of Texas, has as his project "Determination of the thermal characteristics of refrigerated foods," with a grant of $1,500. Another grant of $2,500 went for Dr. G. F. Stewart, research professor poultry products technology, of Iowa State College, who will delve into the subject, "Eviscerated poultry. Palatability and histologic changes during refrigerated storages at different temperatures."

Prof. E. H. Wiegand, head of the food industries department of Oregon State College, was designated in a $2,000 grant for investigation of "The use of mycostatic and bactericidal agents and refrigeration for the preservation of certain perishable products and beverages in refrigerated warehouse cooler storage." Dr. E. P. Christopher, head of the department of horticulture of Rhode Island State College, will undertake a $2,000 study of "Carbon dioxide pre-storage treatment in relation to control of storage scald of apples and progress of softening and rodent extermination."

### PURPOSE OF GRANTS

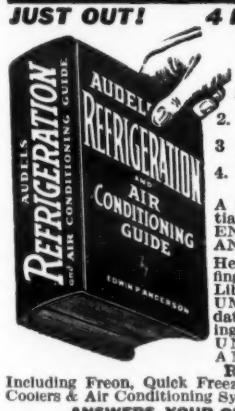
These grants are in keeping with a Foundation objective "to develop and support investigations in the science and art of refrigeration of foods and other commodities through a nationwide program of financial grants to established institutions and agencies of research." The Foundation was formed in 1943 by the refrigerated warehouse industry.

Salute to AMERICAN INDUSTRY
During 1944-45, Union Pacific paid tribute to American industry on its radio program "Your America", broadcast each week over a nation-wide network. Representatives of 70 major industries were given the opportunity to present the dramatic story of their respective industry's contribution to the welfare of the nation.
For example, on one program our guest speaker, Louis Ruthenburg of Servel, Inc., Evansville, Ind., represented the refrigeration industry.
Union Pacific—along with other railroads—was then engaged in moving vital wartime materials. Your industry and the nation generally knows what a tremendous task that was and how efficiently it was accomplished.
Today, Union Pacific is prepared to continue its assistance to your industry by speeding the distribution of peacetime commodities. Equipment, facilities and personnel are geared to provide unexcelled service.
A staff of trained traffic men stand ready at all times to cooperate with you.
For fast, dependable service . . . .
WASH. MONT. IDA. ORE. WYO. NEBR. NEV. UTAH COLO. KAN. CALIF.
UNION PACIFIC
Be Specific—say "Union Pacific"
★ Union Pacific will, upon request, furnish information about available industrial and mercantile sites in the territory it serves. Address Union Pacific Railroad, Omaha, Nebraska.
The Progressive
UNION PACIFIC RAILROAD
The Strategic Middle Route



**AUDELS REFRIGERATION and AIR CONDITIONING GUIDE**

**JUST OUT! 4 Books in One!**




Covering:
Basic Principles, Servicing, Operation, Repair of
1. Household Refrigeration
2. Special Refrigeration Units
3 Commercial & Industrial Refrigeration
4. Air Conditioning Systems

A gold mine of essential important facts for ENGINEERS, USERS AND SERVICEMEN.

Here you have at your fingers' ends a Complete Library in ONE VOLUME, the necessary data you have been looking for on: MODERN UNITS, SYSTEMS AND MACHINES, REFRIGERANTS, Including Freon, Quick Freezing, Lockers, Water Coolers & Air Conditioning Systems.

**ANSWERS YOUR QUESTIONS.**

1280 Pages, 46 Chapters all Fully Illustrated & Indexed for Ready Reference.

**$4 COMPLETE • PAY ONLY $1 A MONTH**

Get This Information for Yourself. Mail Coupon Today. No Obligation Unless Satisfied. ASK TO SEE IT.

**AUDEL, Publishers, 49 W. 23 St., N. Y. 10**
MAIL AUDELS NEW REFRIGERATION GUIDE for free examination. If O.K. I will send you $1 in 7 days; then remit $1 monthly until price of $4 is paid. Otherwise I will return it.

Name _____
Address _____
Occupation _____
Employed by _____ R-13




Want Refrigerator
ALSO WASHING MACHINE.
IF THE PART YOU WANT
can be had...you can get it at..
REFRIGERATION
PARTS HEADQUARTERS
Write for Catalog
THE HARRY ALTER CO.
1728 S. Michigan Ave. Chicago, 16, Ill.
Two Big Warehouses to Serve You
134 Lafayette St. New York, 13, N.Y.

## Oklahoma Prepares to License Electrical Contractors, Workers

OKLAHOMA CITY, Okla. — Prepared to start issuing licenses to electrical contractors and journeymen electricians under a law passed by the 1945 State Legislture, the new Oklahoma State Electrical Administrative Board established Jan. 3 a permanent office in the state capitol here.

Contractors and journeymen operating in the state on or before April 24, 1945, may obtain licenses without undergoing an examination, if obtained not later than Feb. 13.

The license fee is $50 a year for contractors, $5 for journeymen. Should an electrician be both a contractor and a journeyman, separate licenses must be obtained by paying both fees.

Although no deadline has been set for purchase of the licenses, Clifford Anderson, secretary, said the permits will not be required until an active inspection takes place.

"We'll give ample notice when we begin inspections," Mr. Anderson said. "We aren't going to sneak up on anybody."

The on-year licenses will expire June 30. An opinion by Attorney General Randell S. Cobb has held that the electrical men must pay the full fee for the fraction remaining of this fiscal year.

Licenses may be obtained from the board by mail or in person, Mr. Anderson said.

## New Bus--

*(Concluded from Page 1, Column 2)*

Going into detail on the air conditioning system, he prophesied that "all interiors will be completely air conditioned, and we mean air conditioned, not just cooled. Twenty to twenty-five cu. ft. of fresh air will be introduced per seat per minute.

"This air may contain as much as 132 grains of moisture per pound. This must be reduced to at least 72 grains.

"Thus, together with the sensible temperature reduction necessary to human comfort, the load imposed by the passengers, etc., will require about 10 tons equivalent refrigeration. All baggage compartments will be air conditioned.

"This will be provided by exhaust heat, using a vapor system similar to the one now employed by the railroads. Turbine exhaust heat will be ample for this purpose."

With the inside of the coach pressurized, infiltration of dust and dirt will be prevented, Mr. Smith said. He declared that all incoming fresh air will be filtered.

Just how ice-cold water would be circulated to each seat, Mr. Smith did not explain.

He envisioned an automatic multi-circuit radio telephone switchboard so that "any passenger may pick up a phone, without leaving his seat, call any telephone number in the country, and carry on a conversation while traveling at more than 100 miles per hour." Mr. Smith also predicted a public address system for passenger information and a multi-channel radio receiving set, with headphones built into seat head rests and control provided by individual switches.

Present-day gasoline and diesel engines will be obsolete, he thinks, with power-generating equipment possibly consisting of a gas turbine connected to a small, high-speed d.c. generator and four small electric motors to provide flexibility in the final drive. Even the possibility of using atomic energy to generate heat and thus secure power was mentioned, along with a report that "one of our largest electrical manufacturing companies has constructed or is in the process of constructing an atomic powered railway locomotive."

Other features of this future coach, as Mr. Smith sees it, will be tires without air, brakes moving away from the wheels, better suspension systems with the leaf-spring type eliminated, power steering, windows that can be used as emergency exits, a built-in fire extinguishing system, hydraulically-operated doors and windshield wipers, and electric defrosting of windows.

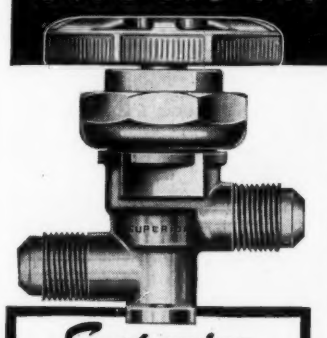
And all this will be done at about one and one-half cents per passenger mile, Mr. Smith is convinced.

## Latest Refrigerator Prices As Established by OPA

| Make | Brand | 1946 Model No. | 1st Zone | 2nd Zone | 3rd Zone | 4th Zone | 5th Zone |
|---|---|---|---|---|---|---|---|
| Admiral Corp. | Admiral | CS-746 | $187.95 | $192.95 | $197.95 | ..... | ..... |
| | | CS-946 | 217.95 | 222.95 | 227.95 | ..... | ..... |
| Associated Mdsg. Corp. | A. M. C. | A-736-S | 147.95 | 157.95 | ..... | ..... | ..... |
| Borg-Warner Corp. | Norge | M-746 | 193.95 | 196.95 | 198.95 | 200.95 | 202.95 |
| Copeland Refrig. Corp. | Copeland | Prices and models to be announced | | | | | |
| The Crosley Corp. | Crosley | SS-746 | 148.50 | 150.50 | 153.50 | 155.50 | ..... |
| Cussins & Fearn | Whitehouse | C-736-S | 147.95 | ..... | ..... | ..... | ..... |
| Edwards Stores | Edwards | E-736-S | 147.95 | ..... | ..... | ..... | ..... |
| Edison General Electric Appliance Co., Inc. | Hotpoint | EA6-46 | [1] 133.75 | ..... | ..... | ..... | ..... |
| | | EA7-46 | 151.50 | ..... | ..... | ..... | ..... |
| | | EB7-46 | 188.25 | ..... | ..... | ..... | ..... |
| Firestone Tire & Rub. | Firestone | F 736 S | 147.95 | 157.95 | ..... | ..... | ..... |
| Gamble-Skogmo, Inc. | Coronado | 44-1993 | 147.95 | 157.95 | ..... | ..... | ..... |
| General Electric Co. | General Electric | LB6-46 | [1] 133.75 | ..... | ..... | ..... | ..... |
| | | LB7-46 | 151.50 | ..... | ..... | ..... | ..... |
| | | JB7-46 | 188.25 | ..... | ..... | ..... | ..... |
| General Motors Corp. | Frigidaire | SI7 | [2] 146.75 | [3] 148.25 | ..... | ..... | ..... |
| | | MI7 | 161.75 | 163.25 | ..... | ..... | ..... |
| | | MPI7 | 184.75 | 186.75 | ..... | ..... | ..... |
| | | DI7 | 178.50 | 180.75 | ..... | ..... | ..... |
| | | DPI7 | 202.00 | 204.50 | ..... | ..... | ..... |
| | | DI9 | 224.75 | 227.50 | ..... | ..... | ..... |
| | | CDI7 | 248.25 | 251.75 | ..... | ..... | ..... |
| | | CPDI7 | 271.50 | 275.25 | ..... | ..... | ..... |
| | | CDI9 | 283.25 | 287.25 | ..... | ..... | ..... |
| | | CPDI9 | 306.50 | 310.75 | ..... | ..... | ..... |
| | | CPDI13 | 482.00 | 489.25 | ..... | ..... | ..... |
| | | DPI9 | 247.50 | 250.50 | ..... | ..... | ..... |
| | | AHI4 | 137.00 | 138.25 | ..... | ..... | ..... |
| | | AHI6 | 140.75 | 142.00 | ..... | ..... | ..... |
| Gibson Electric Refrigerator Corp. | Gibson | F666 | 172.25 | 175.25 | 178.25 | 181.25 | 184.25 |
| | | F686 | 196.50 | 199.50 | 202.50 | 205.50 | 208.50 |
| | | F786 | 215.95 | 218.95 | 221.95 | 224.95 | 227.95 |
| | | SF796 | 255.50 | 258.50 | 261.50 | 264.50 | 267.50 |
| Goldblatt Brothers | Freezemaster | 6B736S | 147.95 | ..... | ..... | ..... | ..... |
| J. L. Hudson | Hudson | A736S | 147.95 | ..... | ..... | ..... | ..... |
| Montgomery Ward & Co. | Montgomery Ward | Prices and models to be announced | | | | | |
| Nash-Kelvinator Corp. | Kelvinator | CS-7 | [1] 146.95 | ..... | ..... | ..... | ..... |
| | | C-7 | 171.95 | ..... | ..... | ..... | ..... |
| | | CD-7 | 185.95 | ..... | ..... | ..... | ..... |
| | | M-9 | 253.95 | ..... | ..... | ..... | ..... |
| Nash-Kelvinator Corp. | Leonard | SL7 | [1] 146.95 | ..... | ..... | ..... | ..... |
| | | L-7 | 171.95 | ..... | ..... | ..... | ..... |
| | | DL-7 | 185.95 | ..... | ..... | ..... | ..... |
| | | LH-9 | 253.95 | ..... | ..... | ..... | ..... |
| The Philco Corp. | Philco | A-622 | 156.50 | 158.50 | 159.95 | 164.50 | 167.50 |
| | | A-721 | 177.50 | 179.50 | 182.50 | 185.50 | 188.50 |
| | | A-731 | 197.50 | 199.50 | 202.50 | 205.50 | 208.50 |
| | | A-741 | 217.50 | 219.50 | 222.50 | 225.50 | 228.50 |
| | | A-750 | 232.50 | 234.50 | 237.50 | 242.50 | 245.50 |
| | | A-751 | 246.50 | 248.50 | 251.50 | 254.50 | 257.50 |
| | | A-752 | 263.50 | 265.50 | 268.50 | 271.50 | 273.50 |
| | | A-951 | 296.50 | 299.50 | 302.50 | 305.50 | 309.50 |
| | | A-950 | 266.50 | 269.50 | 272.50 | 275.50 | 279.50 |
| | | A-931 | 216.50 | 219.50 | 222.50 | 225.50 | 229.50 |
| Rich's, Inc. | Rich's | A-736S | 147.95 | ..... | ..... | ..... | ..... |
| | | **Sales from retail stores** | | | | | |
| Sears, Roebuck & Co. | Coldspot | 45126 | [4] 125.95 | [5] 130.95 | [6] 135.95 | ..... | ..... |
| | | 45236 | 164.95 | 169.95 | 174.95 | ..... | ..... |
| | | 45326 | 174.95 | 179.95 | 183.95 | ..... | ..... |
| | | 45238 | 183.95 | 188.95 | 193.95 | ..... | ..... |
| | | 45428 | 193.95 | 198.95 | 203.95 | ..... | ..... |
| | | 41336 | 203.95 | 208.95 | 213.95 | ..... | ..... |
| | | 41228 | 183.95 | 188.95 | 193.95 | ..... | ..... |
| | | **Mail order sales** | | | | | |
| | | 45126 | 115.95 | 120.95 | 125.95 | ..... | ..... |
| | | 45236 | 154.95 | 159.95 | 164.95 | ..... | ..... |
| | | 45326 | 164.95 | 169.95 | 173.95 | ..... | ..... |
| | | 45238 | 173.95 | 178.95 | 183.95 | ..... | ..... |
| | | 45428 | 183.95 | 188.95 | 193.95 | ..... | ..... |
| | | 41336 | 193.95 | 198.95 | 203.95 | ..... | ..... |
| | | 41228 | 173.95 | 178.95 | 183.95 | ..... | ..... |
| Servel, Inc. | Servel | R-400 | 149.95 | 153.45 | 155.95 | 156.45 | ..... |
| | | R-600-A | 192.95 | 196.45 | 198.95 | 199.45 | ..... |
| | | R-600 | 274.95 | 278.45 | 280.95 | 281.45 | ..... |
| | | R-800A | 269.95 | 273.45 | 275.95 | 276.45 | ..... |
| | | R-800 | 324.95 | 328.45 | 330.95 | 331.45 | ..... |
| | | N-603 | 284.95 | 287.95 | 290.45 | 291.95 | ..... |
| | | N-803 | 334.95 | 337.95 | 340.45 | 341.95 | ..... |
| Spiegel | Snowflake | 5-7365 | 147.95 | ..... | ..... | ..... | ..... |
| Western Auto Sup. Co. | Coronado | 44-1993 | 147.95 | 157.95 | ..... | ..... | ..... |
| Westinghouse Electric & Mfg. Co. | Westinghouse | B-7-46 | [1] 179.95 | ..... | ..... | ..... | ..... |

[1] Zone 1 includes 48 states and Washington, D. C.
[2] Territories served by independent distributors.
[3] Territories served by factory branches.
[4] Midwest Zone.
[5] East-Southeast Zone.
[6] West-Southwest Zone.


CHECK THESE FEATURES




The only diaphragm packless valve with the internal assembly removable as one complete unit . . . a valuable feature when it comes to soldering lines to the valve connections. No need to break the diaphragm seal . . . simply remove the internal assembly *as a unit* . . . solder the connections . . . and replace the assembly. No fuss . . . no bother . . . no special tools . . . and above all, no damage to vital parts. What could be simpler!

But that's not the only important feature of these SUPERIOR DIAPHRAGM PACKLESS VALVES! Pressure responsive cup forms positive pressure-tight seal . . . permitting replacement of the diaphragm with full pressure in the valve . . . or even actual operation of the valve *without the diaphragm* . . . in an emergency.

Rugged, pleasing appearance—ease of operation—generous openings—extra long life—all these are standard features of the valve.

*If you haven't a copy of Catalog R2, request one today.*

No. 122

SUPERIOR VALVE & FITTINGS COMPANY
PITTSBURGH – 26 – PENNSYLVANIA
OFFICES IN PRINCIPAL CITIES • STOCKS: CHICAGO (6) • LOS ANGELES (15) • JOBBERS EVERYWHERE

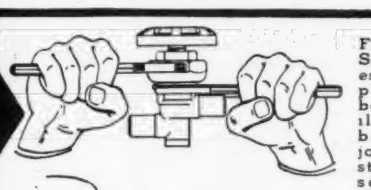


FIGURE 1—Shows wrenches properly applied to main body and auxiliary body for breaking the joint; the first step in disassembling the valve.

FIGURE 2—Observe here the entire internal assembly being removed by hand.

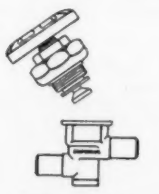


FIGURE 3—The entire internal assembly has been removed from the main body.

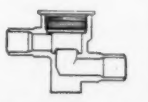


FIGURE 4—The main body, devoid of all internal parts, is now ready for cleaning and fluxing of the sweat tube connections preparatory to soldering.

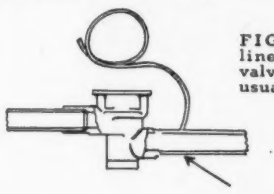
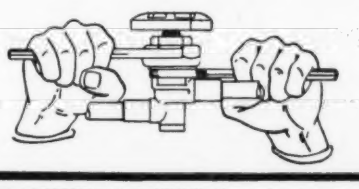
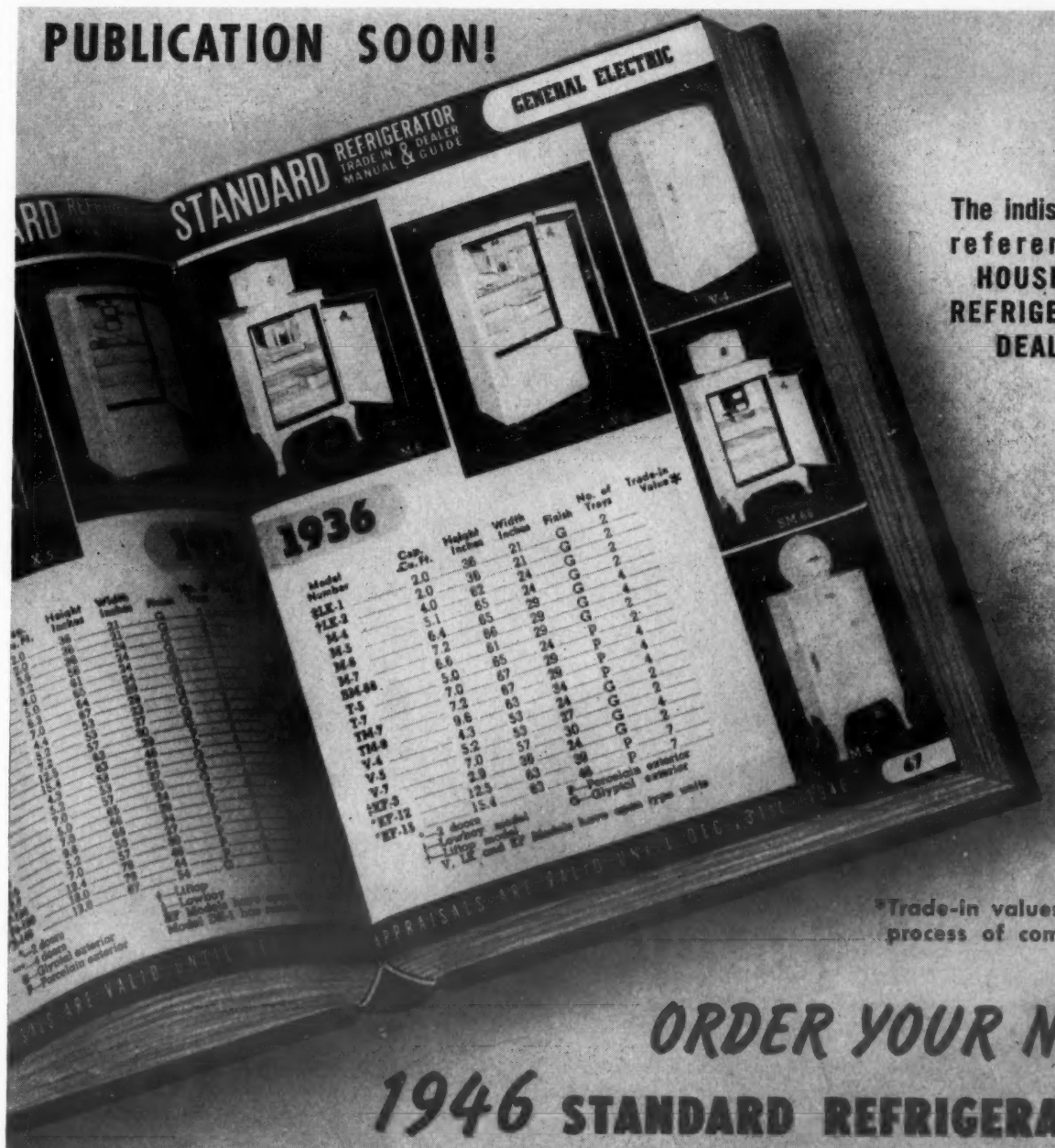


FIGURE 5—Refrigerant lines are soldered to the valve connections in the usual manner. Danger of distorting internal parts is eliminated because all these parts have been removed.



PUBLICATION SOON!




The indispensable reference for HOUSEHOLD REFRIGERATION DEALERS

*Trade-in values now in process of computation

ORDER YOUR NEW
1946 STANDARD REFRIGERATOR
TRADE-IN MANUAL & DEALER GUIDE *Now!*

Detailed specifications and actual photographic reproductions of over 1000 of the key refrigerator models sold since 1928 including the new 1946 models. Arranged and indexed for quick reference. More than 2000 authoritative trade-in valuations shown—appraisals impartially established by experts in the refrigerator field.

Protect your profits—Be prepared with sound trade-in estimates. *Order this compact pocket size (5x7), complete reference manual today!*

Bookbound in durable green cloth binding—256 pages of solid, useful information—*only $5 a copy.*

A limited edition will be published before May. Write for quantity discounts on 100 or more copies.

STANDARD REFRIGERATOR TRADE-IN MANUAL CO.
503 West 43rd Street, New York 18, N. Y.

Please send me _____ copies of the TRADE-IN MANUAL at $5.00 each.

NAME _____

STREET ADDRESS _____

CITY _____ ZONE _____ STATE _____

Check or Money Order Enclosed ☐ Send C.O.D. ☐

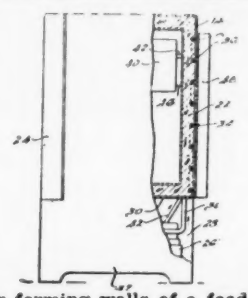
A-1

# PATENTS

## Week of Dec. 25

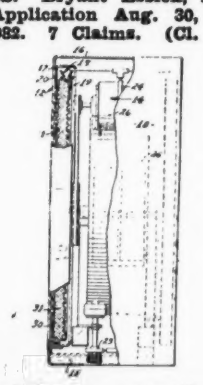
**2,391,507. REFRIGERATING APPARATUS. Lawrence A. Philipp, Detroit, Mich., assignor to Nash-Kelvinator Corp., Detroit, Mich., a corporation of Maryland. Application Aug. 24, 1944, Serial No. 550,919. 2 Claims. (Cl. 62—116.)**

2. Refrigerating apparatus comprising an outer metallic casing and an inner liner arranged in spaced relationship,



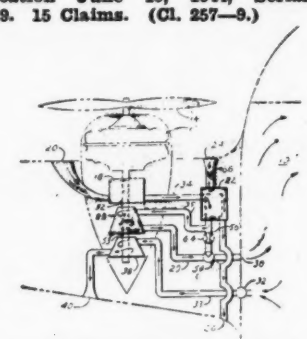
said liner forming walls of a food storage compartment, said cabinet also having a mechanism compartment, a cooling element for refrigerating said food compartment, a motor compressor unit in said mechanism compartment, a coiled condenser tube united to the inside surface of the rear wall of said casing and a corrugated metallic strip secured to the exterior surface of said rear wall to form a plurality of flues which also serve as fins to dissipate heat from said condenser tube, said motor compressor unit being connected to said cooling element and condenser tube and being positioned in said mechanism compartment so that heat generated thereby may initiate a flow of convection air currents through said flues to absorb heat radiated from said condenser tube.

**2,391,558. PAD FOR EVAPORATIVE COOLERS. Bryant Essick, Los Angeles, Calif. Application Aug. 30, 1944, Serial No. 551,982. 7 Claims. (Cl. 261—97.)**



1. A pad for an evaporative cooler including, a porous envelope, and a body of wood excelsior in the envelope including red wood having the property of retarding bacterial growth and white wood having a springy nature.

**2,391,838. AIR CONDITIONING SYSTEM. Earl Schuyler, Kleinhans, Santa Monica, and Wilbur W. Reaser, Pacific Palisades, Calif., assignors to Douglas Aircraft Co., Inc., Santa Monica, Calif. Application June 19, 1944, Serial No. 541,029. 15 Claims. (Cl. 257—9.)**



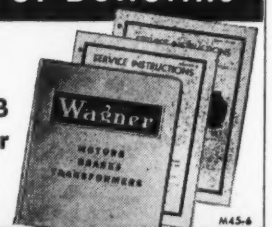
1. In a pressure system for an aircraft the combination of: an air compressor; an intake to the compressor from the ambient atmosphere; a discharge conduit system leading from the compressor to the ambient atmosphere including an inlet air duct to the cabin of the aircraft and an outlet duct from the cabin to the ambient atmosphere: a heat interchanger in the inlet duct; means for supplying a coolant fluid to the interchanger; an expansion turbine in said inlet duct intermediate said heat interchanger and said cabin; a second expansion turbine in said outlet duct; and means for delivering the power generated in both turbines to said compressor.

### AVAILABLE FOR LICENSING OR SALE

Pat. 2,303,098. REFRIGERATED DISPLAY CASE TRAY-HOLDING MEANS. Patented Nov. 24, 1942. Shaped strips which act as supporting means are inserted in display case; strips prevent trays in one row from sliding into other rows; strips are made in step configuration. Inexpensive and apparently present no manufacturing difficulties. Wide variety of display tray patterns can be secured. (Owner) Willis C. Waldo, 96 Fremont St., Claremont, N. H. Groups 25—41; 33—73; 34—31—41; 35—84; 40. Reg. No. 777.


Complete Line of
HERMETIC
Self-Contained OPEN TYPE
and REMOTE TYPE
Refrigerating Units
⅛ TO 20 H.P.
UNIVERSAL COOLER
MARION OHIO — BRANTFORD ONTARIO
WE SELL TO MANUFACTURERS ONLY
UNIVERSAL COOLER CORPORATION
Home and Refrigeration since 1922



Send For Bulletins
MU-185, MU-30B, and MU-7B on Wagner ELECTRIC MOTORS


Wagner Electric Corporation
ESTABLISHED 1891
6471 Plymouth Avenue, St. Louis 14, Mo., U. S. A.
ELECTRICAL AND AUTOMOTIVE PRODUCTS

IT'S THE INSIDE OF THIS TUBE THAT COUNTS MOST

REVERE Dryseal Copper Tube, for refrigeration, air conditioning, heat control, bottled gas and other exacting purposes, is fine looking tube as you take it from the package. And it gives your installations a high quality look. But still more important for your profit and reputation is the part of this tube you don't see. *Inside,* it is clean, bright, and bone dry. Both ends are sealed to prevent the entrance of any moisture that might react with a refrigerant and produce corrosive products.

We know the importance of this, to you and your customers alike. That is why Revere uses all its long-accumulated skill in producing this fine tube, why it is tested and inspected with extra care at every manufacturing step. You can rely on Revere Dryseal Copper Tube to make each installation as high-grade as it looks. This tube is dead soft for easiest working. It comes in sizes from ⅛" to ¾" O.D. with .035" wall.

Revere Dryseal Copper Tube is sold by Revere Distributors in all parts of the country. The Revere Technical Advisory Service is always ready to help with your difficult problems.

REVERE
COPPER AND BRASS INCORPORATED
*Founded by Paul Revere in 1801*
230 Park Avenue, New York 17, N. Y.
*Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; New Bedford, Mass.; Rome, N. Y.—Sales Offices in principal cities*

Listen to *Exploring the Unknown* on the Mutual Network every Sunday evening, 9 to 9:30 p.m., EST.


# CLASSIFIED ADVERTISING

RATES for "Positions Wanted" $2.50 per insertion. Limit 50 words.

RATES for all other classifications $5.00 per insertion. Limit 50 words.

Advertisements set in usual classified style. Box addresses count as five words, other addresses by actual word count.

PAYMENT in advance is required for advertising in this column.

### POSITIONS WANTED

SALES ENGINEER, M.E., experienced in application, installation, and service of refrigeration equipment, desires to locate in North Central Texas. Eight successful years in engineering, sales, manufacturing, including two years charge commercial refrigeration sales in large territory. Can organize dealers and close sales. Age 32. Box 1898, Air Conditioning & Refrigeration News.

### POSITIONS AVAILABLE

SALES & APPLICATION Engineer, manufacturer of 10-50 ton compressor units. Man who has technical knowledge of all fields air conditioning and refrigeration plus sales experience. Eventually head department. Please write fully and state salary with commission desired. SCHNACKE, INC., 1016 E. Columbia St., Evansville, Ind.

APPLICATION ENGINEER: familiar with technical and practical applications of heat transfer equipment wanted by refrigeration and air conditioning manufacturer located in Michigan. Please advise background and qualifications. Box 1793, Air Conditioning & Refrigeration News.

COMMERCIAL application and service engineers. Large refrigeration firm with growing export business has openings in several territories for qualified refrigeration application and service engineers. Knowledge of foreign languages helpful. Write giving full details experience and references. Box 1797, Air Conditioning & Refrigeration News.

WANTED: Service man for bottle coolers and vending machines. Prefer fully experienced man; however, we would be willing to teach vending machine service to an A-1 refrigeration mechanic. Excellent opportunity to become connected with an aggressive Coca-Cola Bottler located in central Pennsylvania. Write Box 1897, Air Conditioning & Refrigeration News.

FIELD ENGINEERS: Leading manufacturer has openings for experienced engineers in Refrigeration, Air Conditioning, and Heating. College graduates with Sales Engineering Application knowledge desirable. Salary, car, and traveling expenses provided. Write, giving full background and qualifications in first letter. Box 1899, Air Conditioning & Refrigeration News.

DISTRICT REPRESENTATIVE: Leading manufacturer has openings for seasoned men in Heating, Cooling, and Commercial Refrigeration. Specialty selling and dealer selection knowledge desirable. Salary, car, and traveling expenses provided. Write, giving full background and qualifications in first letter. Box 1900, Air Conditioning & Refrigeration News.

SALES ENGINEER: For national accounts. College graduate with experience in Air Conditioning desirable. Vacancy existing in established manufacturing company operating on nation-wide basis. Write, giving full background and qualifications in first letter. Box 1901, Air Conditioning & Refrigeration News.

SALESMAN: We need a man who has had experience in refrigeration service and sales, and is capable of figuring jobs for dealers, to represent a jobber in the mid-west. Box 1903, Air Conditioning & Refrigeration News.

SAN DIEGO, California. Wright Refrigeration Service requires first class service men at $1.50 per hour with time and half over 40 hours per week. Steady work, lots of overtime, and the best climate in America. WRIGHT REFRIGERATION SERVICE, 1337 India St., San Diego, Calif.

### FRANCHISES WANTED

ROOM COOLER Distribution wanted by large distributor of refrigeration and air conditioning products. Chicago area. Well designed, efficient, and attractive line of console and portable type room coolers desired. Will produce volume. Box 1894, Air Conditioning & Refrigeration News.

### EQUIPMENT FOR SALE

BRAND NEW 1946 Fleetwood 16 ft. double duty display cases and new G. E. ½-hp. air cooled compressors for remote application. Case white porcelain enamel, 3 glass solid front, pure corkboard insulation, interior lights, wrapping shelves. Equipment fully guaranteed. Write CASALE EQUIPMENT CO., 140 Pine St., Williamsport, Pa.

FOR SALE. Remanufactured air and water-cooled condensing units ¼ hp. up to 1½ hp. Frosted food and ice cream cabinets. EDISON COOLING CORP., 310 East 149th St., New York 51, N. Y.

### BUSINESS OPPORTUNITIES

SUPPLY HOUSE for sale: Disagreement of partners makes it necessary to sell refrigeration wholesale house, middle eastern section of U. S. Doing over $100,000 volume but possibilities for industrial and refrigeration expansion exceedingly good. Business all clear. Investigate this opportunity now. Box 1896, Air Conditioning & Refrigeration News.

MANUFACTURING PLANT, capable of producing 5,000 condensing units a year, desires investor familiar with refrigeration industry to work with refrigeration engineer in producing line of compressors from ¼ to 1 hp. First year's production sold. For full information, write Box 1902, Air Conditioning & Refrigeration News.

### EQUIPMENT WANTED

WE BUY surplus stocks of new air conditioning high-sides or self-contained air conditioners. We also buy new commercial display cases, reach-in refrigerators, show-cases, new motors, and condensing units, ¼ hp. to 75 hp. PILGRIM REFRIGERATION CO., 48-20 43rd Ave., Long Island City 4, N. Y.


LARGE REFRIGERATION CO.
Has openings for experienced refrigeration salesmen to work abroad. Knowledge of foreign languages helpful. Excellent money making possibilities. Write giving full details, experience, and references.
Box 1794, Air Conditioning & Refrigeration News



AMANA Commercial REFRIGERATION
MODERN
• DISPLAY CASES
• COOLERS
• REFRIGERATORS
• HOME FREEZERS
AMANA SOCIETY
AMANA, IOWA



KRACK ENGINEERED
UNIT COOLERS
FIN COILS
AIR CONDITIONING
Refrigeration Appliances, Inc.
923 W. Lake St., Chicago 7, Ill.



Bowen
REFRIGERATION SUPPLIES, INC.
Atlanta Jacksonville
Tampa Charlotte
"The South's Largest"
Refrigeration Supply Jobber



GENUINE MAYFLOWER
CONDENSING UNITS ½ to 7½ HP
Jobber Inquiries Invited
A complete line backed by nearly a quarter century of user confidence. Write for prices.

MAYFLOWER PRODUCTS, INC
13 S. 5th St., Richmond, Ind.



SORENG
• WIRING HARNESS
• SWITCHES
• RECEPTACLES
ARE ENGINEERED TO MEET YOUR PRODUCTION REQUIREMENTS
SORENG MANUFACTURING CORPORATION
1907 Clybourn Ave.-Chicago 14, Ill.



Canadian Refrigeration Journal
The only publication servicing the industry in Canada
National Business Publications Limited
Gardenvale, Que. - Canada

## Stokol Distributors Elect New Officers

Ivan C. Sutherland (left), manager of Geo. E. Warren Corp. of Lynn, Mass., was elected president of the Stokol Distributors' Association at a recent convention in Indianapolis of the Stokol Stoker Co. Other Officers include Norman James (center) of James & Roach, Detroit, secretary; and Robert P. White of Robert P. White Co., Athens, Ga., treasurer.

## Kalamazoo Stove Offers Independent Dealers Advisory Services

KALAMAZOO, Mich. — The more than 500 dealers which Kalamazoo Stove & Furnace Co. will franchise to sell its line of refrigerators, washers, ranges, heaters, and furnaces are promised full independence of operation plus an advisory service, according to Arthur L. Blakeslee.

"While Kalamazoo has no desire to direct the management of its franchise stores, we will put at the disposal of the dealer a complete business counsel service developed through experience in operating our retail stores," explained Mr. Blakeslee.

"For instance, an accounting method for checking and anticipating profit and loss will be set up in the store at the dealer's request. Special traveling Kalamazoo staffs will train salesmen right in the store and help set up a pay-for-itself repair and service department.

"We intend to supply service to the dealer that will not in any way encroach on his independence of operation," Mr. Blakeslee declared.

Prior to the war the Kalamazoo firm did not offer franchises to independent retailers, but operated through factory-owned stores and by mail order. In addition to the proposed 500 retailer dealerships, the company now plans to sell through department stores.

Models for the appliance line were designed by Walter Dorwin Teague and Jack Morgan.

## Miller and Butler Named Perfex Vice Presidents

L. B. MILLER

ALLEN BUTLER

* * *

MILWAUKEE—L. B. Miller and Allen Butler have been appointed vice presidents of Perfex Corp.'s Controls Division.

Mr. Miller, who has been associated with the controls industry for 21 years, came to Perfex in 1939 in an executive sales capacity. He had formerly been manager of Minneapolis-Honeywell Regulator Corp.'s air conditioning and refrigeration division.

Entering the controls field in 1929 with Time-O-Stat Controls Co., Mr. Butler joined Perfex in 1935. After a year in the Milwaukee headquarters handling advertising and sales promotion, he became manager of the Chicago office, in charge of sales throughout the midwest.

## S-H Electric Appliance Co. Is New Los Angeles Firm

LOS ANGELES—S-H Electric Appliance Co. is the firm name under which Joseph C. Smith and Irving O. Hassell have started to conduct business at 3395½ Cazador Ct. in this city.

## Rural Electrification Boosts Prospects for Veteran Dealership

SPRINGFIELD, Mo.—Pioneers in merchandising electrical refrigeration in the Ozark region of Missouri, the Electrical Equipment Co. here has a greatly expanded program that will be placed in operation as soon as appliances roll off the assembly lines in large quantities.

The firm was the first in the southwestern Missouri area to market the old "Isko" refrigerator, now extinct, and sold this type of electrical refrigeration to customers as early as 1912.

J. T. Coon, president of the 40-year-old company, has built his business, to a major extent, around a farm trade, and he sees bright sales to the ruralists in the offing. Many of his customers electrified their farm homes during the war but were unable to add all of the convenient electrical appliances to their farm homes because of the merchandise shortage in these lines.

He sees especially good sales in home freezing units since more and more farm folk are becoming educated to the bountiful advantages of a freezing unit.

A repair department which served the clientele speedily and spread goodwill for the concern during the war, will give the company an edge on a lot of prospective appliance trade. Often the firm provided while-you-wait service on small repair difficulties, and three-day service on major problems was offered. A large inventory of parts and the recruiting of high school youths with mechanical talents, were invaluable aids in allowing the firm to by-pass these two wartime service pitfalls.

At least 300 Greene county farm homes have been furnished wiring equipment by the Electrical Equipment Co. during the war, and all of these farmers are on the prospect list which will be used when appliances are available.

## Blackburn & Steitz Form New Outlet In Fresno

FRESNO, Calif.—John A. Blackburn and William P. Steitz have opened up a new appliance firm incorporated as the West Fresno Appliance Store here.

Mr. Blackburn, who will be the manager-partner, was formerly head electricial engineer with the Bureau of Power and Light in Los Angeles before coming to Fresno in 1942, and was a state expert on utility domestic electrical service. Mr. Steitz, recently discharged from the Army, has been in the automobile business for the past 15 years.

The store will feature all major appliance lines backed up by a large service department with an assembly line setup for refrigerators, etc.


REFRIGERATION ACCESSORIES
• Instantaneous Water and Beverage Coolers. • Oil Separators. • Two-Temperature Valves. • Accumulator Heat Exchangers. • Equalizer Tanks. • Controlled Temperature Photographic Processing Units. • X-Ray Refrigerating Units.
TEMPRITE PRODUCTS CORPORATION
47 PIQUETTE AVENUE DETROIT 2, MICHIGAN

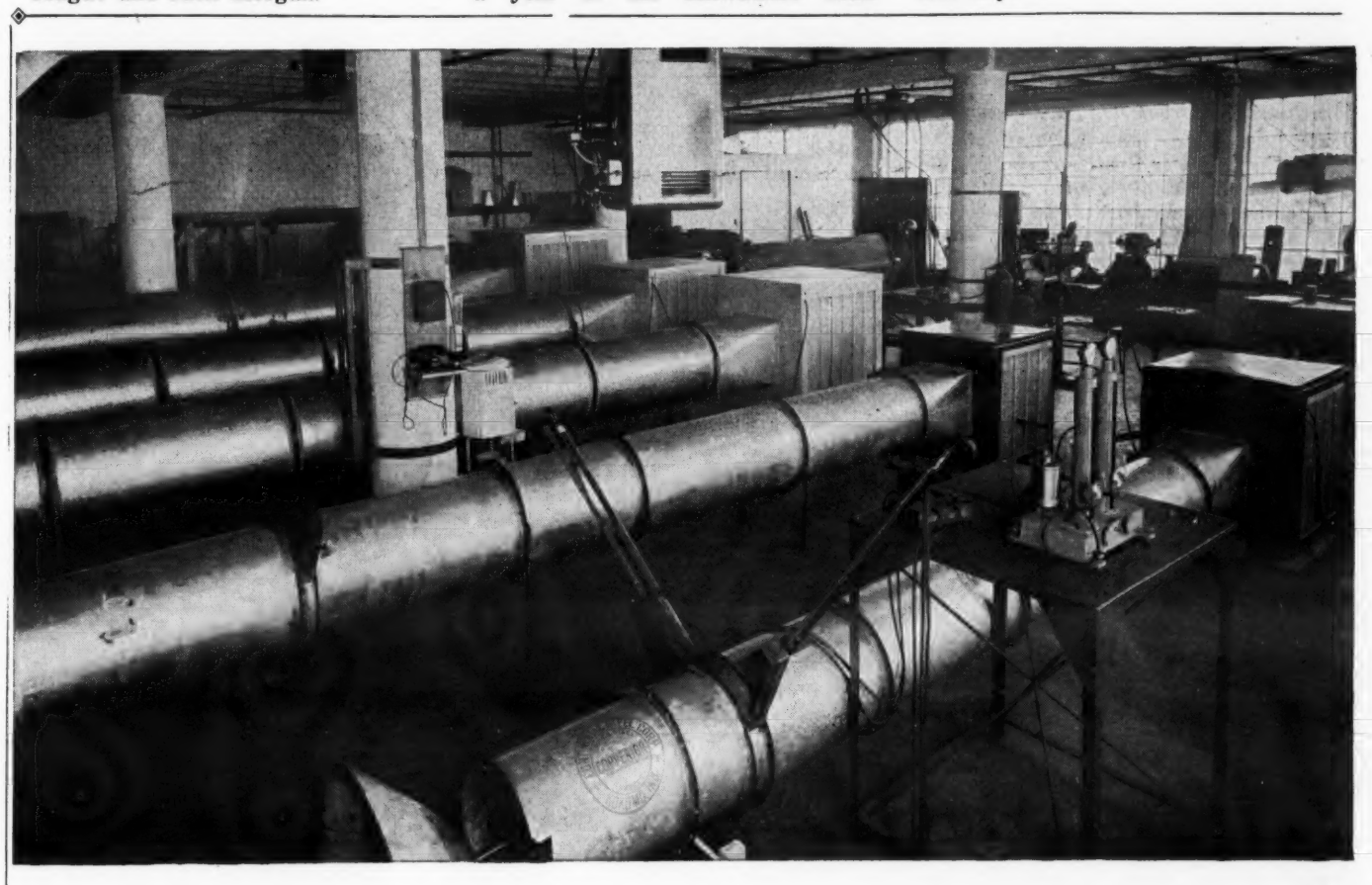
TRUCK
Order Monday—Get It Friday; Rubber Tired
NOW! "Handee Andy" all purpose tube steel 600 lb. cap. Full size, first quality. Not a wartime makeshift. Light wt. very easy to handle. Ht. 44". 14" wide at nose. Curved cross pieces. Nationally known. thousands in use. Fully guaranteed. Send back express collect, if not best truck buy you've seen in years. Clip this.
$12.95 F.O.B. Lots 3, $11.95
The HANDEES CO., Dept. 10A3 Bloomington, Ill.

Walk-In, Beer Dispensing and Beverage Coolers
BLUE RIBBON FARM MILK COOLERS
La Crosse Cooler Co.
La Crosse, Wisconsin
Manufacturers of COMMERCIAL REFRIGERATION
Look for the "LACROSSE" emblem for Assurance of Quality and Performance.
COOLING EQUIPMENT

REFRIGERATION by CURTIS
Write for complete information.
Bulletins C-14-M, C-58, C-68-C
CURTIS REFRIGERATING MACHINE DIVISION
of Curtis Manufacturing Company
1913 Kienlen Avenue • St. Louis 20, Mo.

SPECIFY...
DRYERS THAT BEAR THIS LABEL
CHARGED DAVISON'S IN SILICA GEL OUT WITH
—the label that is your guarantee of maximum performance and satisfaction. Your jobber stocks it—for refilling and in factory charged dryers.

Rebuilding and Exchange
REFRIGERATION PARTS
REPAIRS AND EXCHANGES ON
• COMPRESSORS • EVAPORATORS
• CONDENSERS • FLOAT VALVES
• WATER VALVES • CONTROLS
AND OTHER ITEMS
FULLY ILLUSTRATED CATALOG OF VALUABLE INFORMATION AND PRICES SENT UPON REQUEST ON YOUR COMPANY LETTERHEAD.
Send Today for This Useful Catalog
REFRIGERATION MAINTENANCE CORP. 321 EAST GRAND AVENUE CHICAGO 11, ILLINOIS



UTILITY AIR COOLERS
are scientifically tested in our modern laboratory

Utility Air Coolers, Fans and Blowers are tested for accuracy and efficiency in this most modern and complete laboratory, in accordance with American Society of Heating and Ventilating Engineers' standard test code.

These extensive testing and fact finding facilities, under the supervision of competent and recognized engineers, are your assurance of properly engineered and efficient products, coming from Utility Appliance Corp.

UTILITY
UTILITY APPLIANCE CORP.
Formerly Utility Fan Corporation
4851 S. Alameda St., Los Angeles 11, California

PROPELLER FANS
BLOWERS
FORCED AIR FURNACES
Manufacturers of Evaporative Air Coolers, Blowers, Fans, Forced Air Furnaces, Circulating Heaters, Unit Heaters and Floor Furnaces.
EVAPORATIVE AIR COOLERS
SPACE HEATERS
FLOOR FURNACES

## Baker Appointed Alco Asst. Sales Manager

ARLEY L. BAKER

* * *

ST. LOUIS—Arley L. Baker has been appointed assistant sales manager of the Alco Valve Co., manufacturer of refrigerant control valves.

Formerly application engineer for the company, he will continue to devote most of his time to the field work in which he has a wide and varied refrigeration background.

Mr. Baker came to Alco more than a year ago from Curtis Mfg. Co., where he had been district representative of the north central territory since 1939.

## G-E Prices--

*(Concluded from Page 1, Column 3)*

dry in the air. The machine cannot be started with the cover open, nor can the cover be opened while the machine is in operation. Motor is totally enclosed; water line is fitted with a metal strainer to prevent recirculation of food particles.

The new disposal unit has a finer shredding unit and a new type strainer plate, says G-E which also claims that a "brand new, harder, longer-lasting alloy" is used in its construction. In the event of overloading, the unit is protected by a built-in "thermotector." Also incorporated in the design is a flow interlock in the cold-water line to the sink which allows the unit to start only when there is enough water to wash away all the food particles.

Delivered prices on the new G-E dishwashers now range as low as $124.50 for the AE-646. This model, with a white porcelain cover intended for custom-built installation, formerly listed at $179.50, f.o.b. factory.

The BE-646, a 24-in. cabinet model dishwasher which formerly sold at $194.50 f.o.b. factory, now sells at $139.50 delivered.

The "fully automatic" 48-in. cabinet electric sink, model DE-646, which formerly listed at $269.50 f.o.b. factory when it was only partly automatic, now retails at $199.50 delivered.

Disposal model FA-3, which will fit all standard 3½-in. drains, will sell for $79.50 delivered. It formerly listed at $99.50 f.o.b. factory.

Production of disposals was scheduled to begin Dec. 15, with dishwashers slated for production Jan. 15.

## A.S.H.V.E.--

*(Concluded from Page 1, Column 4)*

mittee on research, the various technical advisory committees, and other special committees.

Officers for the coming year will also be elected during the meeting. Nominated for president is Alfred J. Offner, consulting engineer of New York City. Dr. B. M. Woods, director of university extension, University of California, Berkeley, Calif., has been nominated for first vice president.

G. L. Tuve, head of the department of mechanical engineering, Case School of Applied Science, Cleveland, has been nominated for second vice president; J. F. Collins, Jr., secretary-treasurer of the National District Heating Association, Pittsburgh, is slated to be treasurer.

Nominated for three-year terms on the A.S.H.V.E. council are Earl G. Carrier, Boston branch manager for Carrier Corp.; F. W. Hutchinson, professor of mechanical engineering at Purdue university; R. A. Sherman, supervisor of the fuels division, Battelle Memorial Institute, Columbus, Ohio; and M. S. Wunderlich, general sales manager of the Insulite Division, Minnesota & Ontario Paper Co., Minneapolis.

The following have been nominated for three-year terms on the committee of research: L. N. Hunter, vice president of the National Radiator Co.; C. O. Mackey, professor of heat-power engineering, Cornell university; R. D. Madison, research engineer with Buffalo Forge Co.; Prof. L. G. Miller, who heads the mechanical engineering department of Michigan State college; and L. P. Saunders, chief engineer, research engineering, Harrison Radiator Division, General Motors Corp.

R. H. Carpenter of the New York A.S.H.V.E. chapter, is general chairman in charge of arrangements for the annual meeting this year.

## Liquid Carbonic--

*(Concluded from Page 1, Column 3)*

It will be retailed by General Tire & Rubber Co., Akron, Ohio.

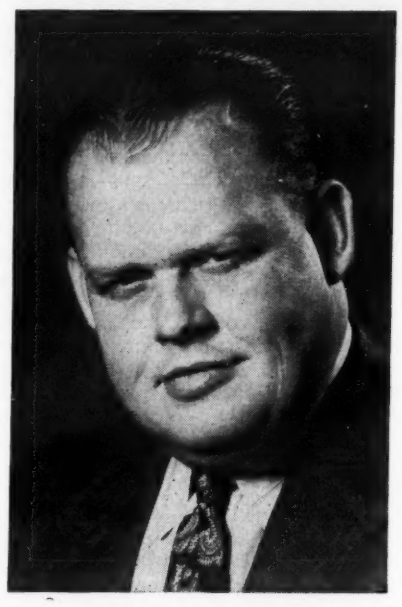
The new soda fountain building is now under construction on a 4¼ acre site adjacent to Liquid's 23-acre factory and main office in Chicago. In the new fountain factory Liquid will manufacture its complete line of soda fountain and luncheonette equipment.

Other portions of Liquid's expansion program include an estimated 50% production increase in its machinery division capacity for manufacturing bottlers' and brewers' machinery. Other additions are seven new carbon dioxide plants in the U. S. and Central and South America; new soda fountain factory and gas plant in Montreal, Canada, and a new office, showroom, and service building in Long Island City, N. Y.

## $400,000 Fire Destroys New Refrigerator Stock

ERIE, Pa.—A large stock of new refrigerators was destroyed in a $400,000 fire which swept the warehouse and office of the Lyons Transportation Co. here recently. The fire was spread by exploding oil drums.

## Laundry Supervisor



ROBERT C. DUNSON

**Recently appointed product supervisor for the Westinghouse laundry equipment department.**

## Krich-Radisco Appoints Hirsch Merchandising Mgr.

NEWARK, N. J.—Arthur J. Hirsch has been appointed merchandising manager of Krich-Radisco, Inc., North Jersey distributor.

Mr. Hirsch's merchandising and sales management experience covers a period of more than 20 years, the last 10 years as branch manager in the New Jersey area for General Electric Co.

## MEETINGS FOR THE INDUSTRY

Jan. 7-19: Winter market sessions at the American Furniture Mart and the Merchandise Mart, Chicago. Forums on available merchandise, new products, postwar distribution plans.

Jan. 28-30, Mon-Wed: 52nd annual meeting of ASHVE. The Commodore, New York City.

Feb. 21-22, Thurs-Fri: National Association of Refrigerated Warehouses. The Edgewater Beach, Chicago.

March 4-7, Mon-Thurs: Spring REMA meeting, including joint sessions with REWA. The Stevens, Chicago.

March 27-31, Wed-Mon: 5th annual convention of the Frozen Food Institute. Park Ave. Armory, 34th St. at Park Ave., New York City.

April 2-4, Tues-Thurs: 12th annual sales conference of EEI. The Edgewater Beach, Chicago.

April 21-25, Sun-Thurs: 37th annual convention of NEWA. The Stevens, Chicago.

April 27-May 19: Products of Tomorrow Exposition. The Chicago Coliseum (on the south fringe of the Loop), Chicago.

## Airtemp Names Donovan Asst. Sales Manager

DAYTON, Ohio — Advancement of J. J. Donovan, eastern divisional manager, to the post of assistant general sales manager of Airtemp Division, Chrysler Corp., has been announced by H. A. Malcom, general sales manager.

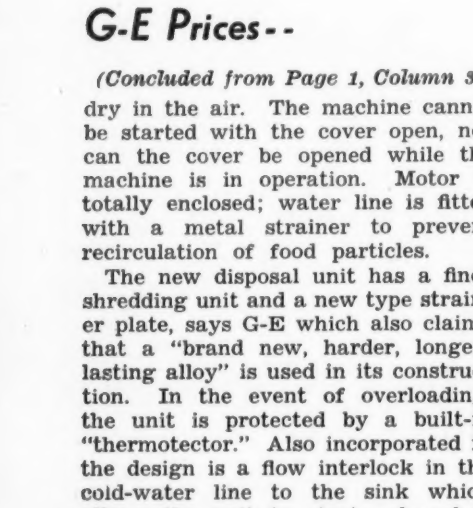
Mr. Donovan's transfer to Dayton strengthens the home office staff with additional broad experience in the direction of sales and distribution activities, said Mr. Malcom. His original asignment with Airtemp was as regional manager in New York, before he became eastern divisional manager.

## Kaufman Elected Head of Retail Furniture Group

CHICAGO—Joseph J. Kaufman, of Tacoma, Wash., vice president of the National Retail Furniture Association and a former mayor of Tacoma, has been elected president of the association for a one-year term.

He is a partner in the retail furniture firms of Kaufman-Lebo Co., of Bremerton; Kaufman-Scroggs Co., of Aberdeen; and Kaufman-Miller, of Port Angeles.

Mr. Kaufman is a past president of the Washington State Retail Furniture Association, a director of the National Bank of Washington, and was mayor of Tacoma from 1939 to 1940.

CHICAGO SHAFT SEALS

Acknowledged as the industry's most effective seal for replacement (even on scored or bent shafts) because it has the self-adjusting sleevelock. Quickly installed. For REAL SATISFACTION never accept a substitute. At all jobbers.

Chicago Seals are best for Coldspot. • Only Chicago Valve Plates have replaceable valve seats.

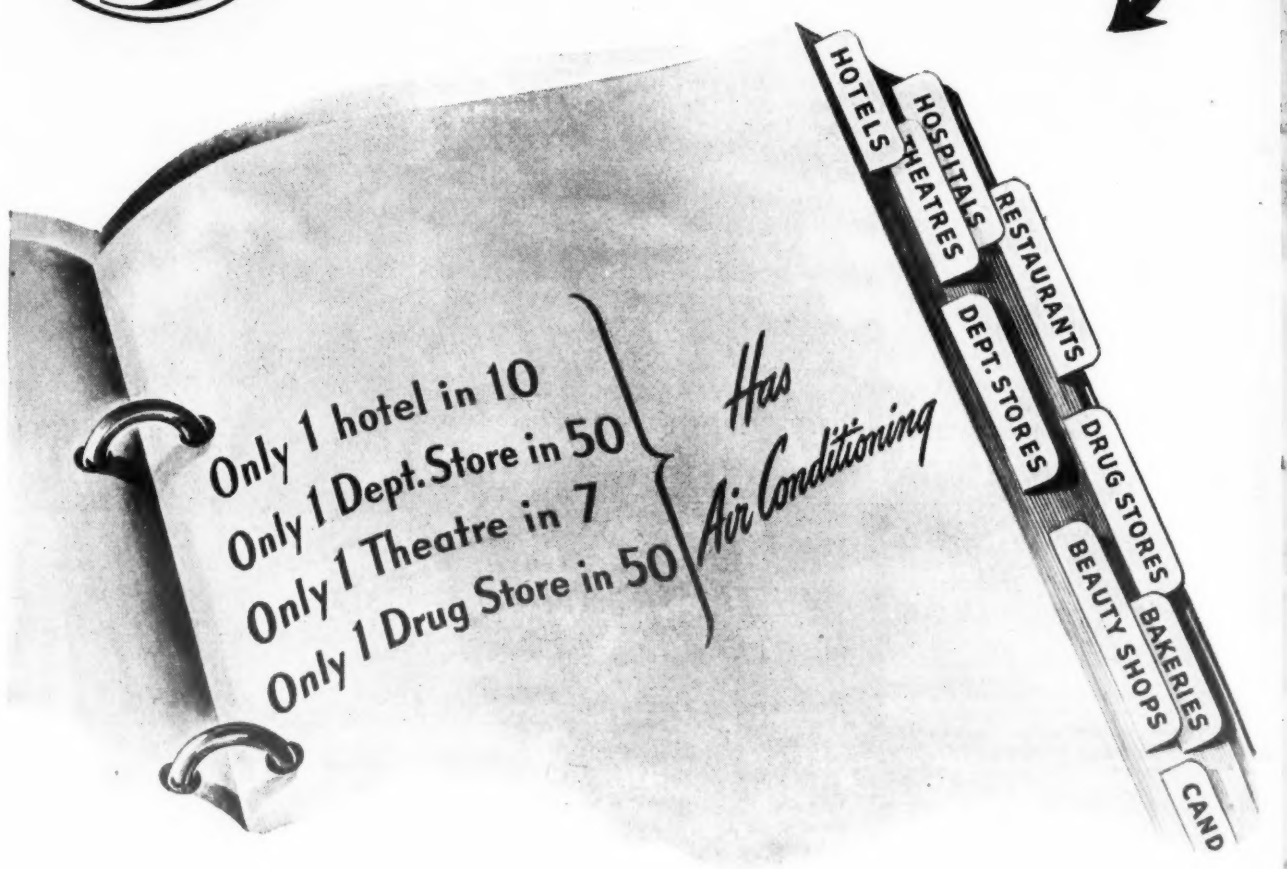
CHICAGO SEAL CO.
20 NORTH WACKER DRIVE, CHICAGO 6, ILL.

Ask Your Jobber for
HASCOBILT Parts
SUCTION and DISCHARGE
VALVE, DISC, REEDS and SPRINGS
for Conventional and Hermetic Type Compressors

HASCO, INC.
GREENSBORO, N. C.

If your jobber can't supply you, send for illustrated catalog and price list.

THESE ARE YOUR PROSPECTS FOR G-E INSTALLATIONS




These prospects know G. E.'s reputation for reliability, for performance. And now they're reading about G-E Better Air Conditioning in such magazines as The Saturday Evening Post, Collier's, Time, Business Week and a long list of business papers.

More and more of these prospects are becoming air conditioning minded . . . Better Air Conditioning minded. Now is your opportunity to show them how G-E Air Conditioning will benefit their business.

Link your reputation with that of G.E. for Air Conditioning and Refrigeration. Make a list of prospects in your territory and start contacting them today. *General Electric Company, Air Conditioning Department, Section 6701, Bloomfield, N. J.*

GENERAL ELECTRIC

AIR CONDITIONING . . . COMMERCIAL AND INDUSTRIAL REFRIGERATION